

STANDARD
Lumber Reference Book
AND CODE

(First Edition)



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Standard Lumber Reference Book and Code

A Complete Compendium of the
Rules of Classification and Inspec-
tion of Lumber, as adopted and in
use by the principal Lumber Asso-
ciations and Railroad Companies in
the United States, together with
a comprehensive Telegraphic Cy-
pher Code and other information
of interest and value to the
Lumber Trade



FIRST EDITION

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PREFACE.

After the publication of five annual issues of the Lumbermen's Yellow Pine and Cypress Reference Book, the undersigned has arrived at the conclusion that the Lumbermen of the United States were in need of a more complete compilation of the rules governing the classification and inspection of all woods, and hence, offers to the trade this First Edition of THE STANDARD LUMBER REFERENCE BOOK AND CODE.

The Code section has been added as a further convenience to those engaged in the lumber business, and its use is commended on account of the fact that it covers all ordinary phrases, and its dimensions, lengths and numeral divisions are more comprehensive than the majority of cypher codes, and its scope of usefulness may be considerably enlarged by holders printing on their stationery the wording: "We use Standard Lumber Reference Book Code."

The advertisers using space in this volume are all representative concerns in their respective lines, and are well worthy of general patronage.

Respectfully,

BENJAMIN F. ULMER,

Compiler.

ATLANTA, GA., January 1, 1907.

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Standard Lumber Reference Book and Code.

ATLANTIC COAST CYPRESS ASSOCIATION.

Grades and Specifications of Cypress Lumber and Shingles, Adopted
January 23, 1896.

GRADES.

LUMBER.

All lumber shall be 10, 12, 14, 16, 18 and 20 feet in length (except Tank Stock, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$ and 4 inches thick, and be classed as Tank Stock, First and Second Clear, Select, Shop and Merchantable.

Tank Stock shall be 5 inches and over in width, $1\frac{1}{4}$ to 3 inches thick, and 8 feet and over long. It may have sap 1 inch wide on 1 side, to extend not over one-half the length and one-half thickness of the piece, and sound knots that do not impair its usefulness for tank purposes.

First and Second Clear shall be 8 inches and over in width, and clear up to 9 inches. Pieces 10 to 12 inches wide may have two sound standard knots of $1\frac{1}{4}$ inches in diameter and three inches of sound bright sap; and for every three inches in width over twelve inches an additional standard knot and an additional inch of sound bright sap. Pieces wider than 10 inches may be half sound bright sap, if free from other defects.

Select shall have one face side and be 7 inches and over in width, will admit two standard knots of $1\frac{1}{4}$ inches in diameter in pieces 10 inches and under in width, and an additional standard knot for every two inches in width above ten inches. Sap not to be considered a defect. Unsound knots that do not go more than one-half way through the board to be allowed. Boards free from other defects on face side to admit a limited number of pin worm holes on edge one-tenth of width of board. Season checks no defect and splits not more than 12 inches on one end to be allowed.

Above grades must be free of shake and peck.

Shop to be 7 inches or over in width, and includes all lumber that will not go into the above grades, but that will cut for shop use so as to work $\frac{3}{4}$ without waste.

BEVEL SIDING.

Merchantable or Common may be any width, admitting sap, knots and shakes, or peck, when the strength is not impaired.

"Clear Heart" must be clear of sap, knots, and without blemish.

"A"—Must have heart face, but may have one inch of bright sap on thin edge and may contain one small, sound knot, and may have bright sap one-fourth its width for 6 inches from one end, or a check in one end not exceeding 6 inches in length.

"B"—Must have one-third of face bright sap, if otherwise clear, or, in lieu of one-third sap, can contain two small sound knots, and may have checks at one end not over 9 inches long.

"C"—May be all bright sap, or may have one to five knots, the whole not aggregating over three inches, or knots, or other defects, that can be removed in two cuts, with waste not exceeding twelve inches in length, or three pin worm holes, and may have checks or splits at one end, not exceeding twelve inches in length.

"D"—May have stain sap, also pin worm holes, unsound knots, shakes, splits or other defects that will not impair its usefulness to exceed one-third.

FLOORING AND CEILING.

"A and Clear"—May have one inch of bright sap on edge and may contain one small sound knot, and may have bright sap one-fourth its width for six inches from one end, or a check in one end not exceeding six inches in length.

"B"—May have one-third of face bright sap, if otherwise clear, or in lieu of one-third sap can contain two small sound knots, and may have checks at one end not over nine inches long.

"C"—May be all bright sap, or may have one to five knots, the whole not aggregating over three inches, or knots, or other defects, that can be removed in two cuts, with waste not exceeding twelve inches in length, or three pin worm holes and may have check or split at one end not exceeding twelve inches in length.

"D"—May have stain sap, also pin worm holes, unsound knots, shake, split or other defects that will not impair its usefulness to exceed one-third.

SHINGLES.

There shall be four grades of shingles, four inches, five and six inches wide, and eighteen and twenty inches long, each width separately bunched, 5 butts 18-inch shingles to measure $2\frac{1}{4}$ inches, 5 butts 20-inch shingles to measure $2\frac{1}{2}$ inches.

The **First** grade shall be branded "No. 1 Clear Heart"; must be all heart, and free from all defects.

The **Second** grade shall be branded "Clear Butts"; must be a dimension shingle, clear of sap and other defects for 7 inches from the butt; tight knots, feather edges and sap allowed above 7 inches from butt.

The **Third** grade shall be branded "Extra A"; must be clear of all defects, except sap.

The **Fourth** grade shall be branded "Star"; must be a dimension shingle, tight for 7 inches from the butt—all defects allowed above 7 inches and pieces 16 inches long.

Difference in price between 1 inch and $1\frac{1}{4}$ inches shall be \$1.00 per M; 1 inch and $1\frac{1}{2}$ inches shall be \$1.00 per M; the difference between $1\frac{1}{2}$ inches and 2 inches shall be \$1.00 per M; the difference between 2 and 3 inches shall be \$1.00 per M; the difference between 3 and 4 inches shall be \$1.00 per M; and the difference between first and second Clear and Selects shall be \$5.00 per M.

GRADES AND SPECIFICATIONS OF FINISHING STOCK.

Adopted January 18, 1896.

"A" Finishing—7 and 8-inch will admit of an inch of bright sap on one edge or one or two small sound knots in lieu of sap.

"A" Finishing—10-inch will admit of two inches of bright sap the full length of the piece, or its equivalent. In lieu of sap may have one or two sound knots.

RULES FOR INSPECTION AND SPECIFICATIONS

Adopted by the Beer Stock Manufacturers' Association, August 12, 1903.

RULES.

For Inspection of Hollowed, Equalized and Listed Beer Staves and Sawed Heading:

Beer Staves

must be made from sound white oak timber, free from short crooks and seed holes; two sound worm holes in a stave may be allowed, but 90 per cent. of each lot must be free from such defects.

Grain.

They must be straight grain, or nearly so as possible, and will be classed as culls if the grain has an angle of over 45 degrees.

Checks.

They must be free from heart checks, of a such nature as to make them unfit for the purpose for which they were intended.

Streaks.

Staves may have black or red streaks on the inside, if they do not show through at any point between chines, nor more than a quarter of an inch deep at end; on outside if they do not show through at any point between chines, nor more than a quarter of an inch deep at end.

Minimum width of barrel staves is to be $3\frac{1}{2}$ inches; $\frac{1}{2}$ and $\frac{1}{4}$ barrel, 3 inches; $\frac{1}{8}$ and $\frac{1}{16}$ staves, $2\frac{3}{4}$ inches, measurement taken on back of stave at bilge, including $\frac{1}{4}$ inch of sap.

DIMENSIONS.

Size	Length	Average	Width	Thickness			Shoulder
				End	Bilge		
$\frac{1}{8}$	16 $\frac{1}{2}$ inches	x 4	inches	x 1 $\frac{1}{4}$ inches	x 1	inches	x 2 $\frac{1}{2}$ inches
$\frac{1}{4}$	20 $\frac{1}{2}$	" x 4 $\frac{1}{4}$	"	x 1 $\frac{1}{2}$	" x 1	3-16	" x 3
$\frac{1}{2}$	25 $\frac{1}{2}$	" x 4 $\frac{1}{2}$	"	x 1 $\frac{5}{8}$	" x 1	5-16	" x 3 $\frac{1}{2}$
I-I.	31	" x 4 $\frac{1}{2}$	"	x 1 $\frac{3}{4}$	" x 1	7-16	" x 4
Ale bbls..	34	" x 4 $\frac{1}{2}$	"	x 1 $\frac{3}{4}$	" x		" x
Ale hhds.	40	" x 4 $\frac{1}{2}$	"	x 1 $\frac{7}{8}$	" x		" x

Beer Heading—Sawed or Chipped.

Specifications as to grain and quality to be the same as in staves, except that streaks shall be allowed on one side only, if same do not pass through the heads or through over one-third of the thickness of the heads at the ends of same.

DIMENSIONS.**Heading—Sawed or Chipped.**

$\frac{1}{8}$	10 $\frac{1}{2}$ inches	x 5 $\frac{1}{4}$ inches	x 1 $\frac{1}{4}$ inches
$\frac{1}{4}$	13	" x 6 $\frac{1}{2}$	" x 1 $\frac{1}{2}$ "
$\frac{1}{2}$	16	" x 8	" x 1 $\frac{5}{8}$ "
I-I	18 $\frac{1}{2}$	" x 6 $\frac{1}{4}$	" x 1 $\frac{3}{4}$ "

The above widths mean clear of sap, and apply to 2-piece heading, except I-I heads, which apply to 3-piece heads.

All of the above dimensions are for green stock, and a variation of 1-16 of an inch to be allowed on all thicknesses.

DESCRIPTION OF GRADES

As Revised and Adopted by the Dressed Gum Lumber Manufacturers' Association, at Cairo, December 1, 1903.

BEVELED SIDING OR WEATHERBOARDING.

No. 1 Grade will allow sound sap without limit, but is otherwise clear except small defects which the lap will cover.

No. 2 Grade may contain imperfection in working and unsound defects which can be removed in two cuts without waste of more than 10% of the length of any one piece.

No. 3 Grade permits all classes of defects, but must work without waste of more than one-third of the contents of any one piece.

PATENT OR DROP SIDING, FLOORING, MATCHED SHEATHING, CEILING AND PARTITION.

No. 1 Grade will allow sound sap without limit, but is otherwise without defects.

No. 2 Grade may contain imperfections in working and unsound defects which can be removed in two cuts without waste of more than 10% of the length of any one piece.

No. 3 Grade permits all classes of defects, but must work without waste of more than one-third of the contents of any one piece.

Patent or Drop Siding may be worked any standard pattern desired, and is regularly made tongued and grooved, though may be ship-lapped if so ordered. State whether single or double cut is wanted, and when possible mail pattern with order to avoid misunderstanding.

Flooring and Matched Sheathing are dressed, both sides and center matched, a decided advantage allowing it to be used for a variety of purposes.

Ceiling is all double beaded one side only, unless otherwise ordered. In ordering special patterns of Ceiling and Drop Siding any small amount produced of different grade than specified must be taken at corresponding difference in price.

Beaded Partition worked two sides, add \$3.00.

1st and 2d Saps in pieces 6 to 7 inches wide are clear; pieces 8 to 10 inches may have one standard defect; pieces from 10 to 12 inches two defects; pieces 13 inches or over may have three standard defects or their equivalent in larger defects. (Sound sap is not considered a defect in this grade.)

Select Commons are calculated to work 75% clear in not over three pieces. Discolored sap, unless of an unsound nature and small pin worm holes, are not considered defects in this grade.

Is recommended more especially for shop or cutting up purposes. Also makes good Cornice Lumber.

Sheathing Boards for lining under weatherboarding, etc. **Roofing Strips** and **Bridging Strips** are practically a No. 2 common grade, but are sorted with a view to the purpose for which they are to be used. The principal defects are deep stain, worm holes, knots and occasional shake. It is good value for the money.

INTERSTATE RULES OF 1905.

Classification and Inspection of Yellow Pine Lumber adopted by the Georgia-Florida Sawmill Association, South Carolina Lumber Association, New York Lumber Trade Association of New York City, Yellow Pine Exchange of New York City, The Lumbermen's Exchange of Philadelphia, Pa., The Lumber Exchange of Baltimore, Md. Also used by Retail Lumbermen's Association of Philadelphia.

Effective on and After February 1, 1905.

GENERAL RULES.

All lumber must be sound, commercial long-leaf yellow pine (pine combining large coarse knots, with coarse grain, is excluded under these rules), well manufactured, full to size and saw butted, and shall be free from the following defects: Unsound, loose and hollow knots, worm holes and knot holes, through shakes or round shakes that show on the surface, and shall be square edge, unless otherwise specified.

A through shake is hereby defined to be through or connected from side to side, or edge to edge, or side to edge.

In the measurement of dressed lumber the width and thickness of the lumber before dressing must be taken—less than one inch thick shall be measured as one inch.

The measurement of wane shall always apply to the lumber in the rough.

Where terms one-half and two-thirds heart are used they shall be construed as referring to the area of the face on which measured.

In the dressing of lumber, when not otherwise specified, one-eighth inch shall be taken off by each planer cut.

All lumber grading higher than the grade for which it is sold shall be accepted as of the grade sold.

CLASSIFICATION.

FLOORING.

Flooring shall embrace four, five and six quarter inches in thickness by three to six inches in width, excluding $1\frac{1}{2} \times 6$. For example, 1×3 , 4, 5 and 6; $1\frac{1}{4} \times 3$, 4, 5 and 6; $1\frac{1}{2} \times 3$, 4 and 5.

BOARDS.

Boards shall embrace all thicknesses under one and a half inches by over six inches wide. For example, $\frac{3}{4}$, 1, $1\frac{1}{4}$ and $1\frac{3}{8}$ inches thick by over 6 inches wide.

The Georgia Pine Co.

Wholesale Lumber Dealers

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All kinds of Long Leaf Yellow Pine Lumber and Short Leaf Lumber. Sailing vessels and steamer shipments, both coastwise and foreign. Cargo lots a specialty. Always in the market and your business will be given prompt attention at all times.

PLANK.

Plank shall embrace all sizes from one and one-half to under six inches in thickness by six inches and over in width. For example, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, $5\frac{1}{4}$, $5\frac{3}{4}$ by 6 and over in width.

SCANTLING.

Scantling shall embrace all sizes exceeding one and one-half inches and under six inches in thickness, and from two to under six inches in width. For example, 2x2, 2x3, 2x4, 2x5, 3x3, 3x4, 3x5, 4x4, 4x5 and 5x5.

DIMENSION.

Dimension sizes shall embrace all sizes six inches and up in thickness by six inches and up in width. For example, 6x6, 6x7, 7x7, 7x8, 8x9 and up.

STEPPING.

Stepping shall embrace one to two and a half inches in thickness by seven inches and up in width. For example, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ x7 and up in width.

ROUGH EDGE OR FLITCH.

Rough Edge or Flitch shall embrace all sizes one inch and up in thickness by eight inches and up in width, sawed on two sides only. For example, 1, $1\frac{1}{2}$, 2, 3, 4 and up thick by eight inches and up wide, sawed on two sides only.

INSPECTION.

STANDARD.

All lumber shall be sound, sap no objection. Wane may be allowed one-eighth of the width of the piece measured across face of wane, extending one-fourth of the length on one corner, or its equivalent on two or more corners, provided that not over 10 per cent. of the pieces of any one size shall show such wane.

MERCHANTABLE.

All sizes under nine inches shall show some heart entire length on one side; sizes nine inches and over shall show some heart the entire length on two opposite sides. Wane may be allowed one-eighth of the width of the piece measured across face of wane, and extending one-fourth of the length of the piece on one corner or its equivalent on two or more corners; provided that not over 10 per cent. of the pieces of any one size shall show such wane.

PRIME.

Flooring shall show one heart face, free from through or round shakes or knots exceeding one inch in diameter, or more than four in a board on the face side.

Boards seven inches and under wide shall show one heart face; over seven inches wide shall show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Plank seven inches and under wide shall show one heart face; over seven inches wide shall show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Scantling shall show three corners heart, free from through or round shakes or unsound knots.

Dimension Sizes.—All square lumber shall show two-thirds heart on two sides, and not less than one-half heart on two other sides. Other sizes shall show two-thirds heart on face and show heart two-thirds of length on edges, excepting when the width exceeds the thickness by three inches or over, then it shall show heart on the edges for one-half the length.

Stepping shall show three corners heart, free from shakes and all knots exceeding half inch in diameter, and not more than six in a board.

Rough Edge or Flitch shall be sawed from good heart timber, and shall be measured in the middle, on the narrow face, free from injurious shakes or unsound knots.

Wane not over 5 per cent. of the pieces in any one size shall be allowed as on merchantable quality.

1905 MERCHANTABLE INSPECTION.
All Sizes Under 9".



All Sap

Some
Heart
Entire
Length

All Sap

All Sap

1905 MERCHANTABLE INSPECTION.
All Sizes 9" and Over.



All Sap

Some
Heart
Entire
Length

All Sap

Some
Heart
Entire
Length

1905 PRIME INSPECTION.
Plank—1½ to under 6" by 6" and over wide.
Where width is 7" and under.



All Sap

All
Heart

All Sap

All Sap

1905 PRIME INSPECTION.
Plank—1½ to under 6" by 6" and over wide.
Where width exceeds 7".



All Sap

Heart
2-3
Area

All Sap

Heart
2-3
Area

1905 PRIME INSPECTION.
 Scantling—1½" to under 6" thick by
 2" to under 6" wide.



Heart
One
Corner
Heart
One
Corner
Heart
Face
Heart
Face

1905 PRIME INSPECTION.
 Dimension Sizes—6x6 and up. All
 Square Lumber.



Heart
1-2
Area
Heart
2-3
Area
Heart
1-2
Area
Heart
2-3
Area

1905 PRIME INSPECTION.
 Dimension Sizes, where width Exceeds
 thickness by less than 3".



Heart
2-3
Length
Heart
2-3
Area
Heart
2-3
Length
Heart
2-3
Area

1905 PRIME INSPECTION.
 Dimension Sizes where width exceeds
 thickness by 3" or over.



Heart
1-2
Length
Heart
2-3
Area
Heart
1-2
Length
Heart
2-3
Area

GULF COAST CLASSIFICATION.

Of Pitch Pine Resawn Lumber, Revised January 7, 1897. Superseding Classification of February 13 and July 2, 1896, W. T. Kilduff, Secretary, Mobile, Ala.

GENERAL RULES.

1. The term "resawn lumber" shall include all of the sizes referred to in this classification.
2. All resawn lumber must be sound, well manufactured, evenly sawn, square-butted with saw, square edge, unless otherwise specified, free from unsound, loose and hollow knots, worm and knot holes, through splits and through shakes.
3. Unless otherwise specified lumber shall be twelve feet and up long. All fractional sizes not herein otherwise provided for shall be classed and inspected as the next lower size if the fraction is less than half the difference between the two sizes given in the classification, but if it is half the difference, or more, it shall be classed as the next size above. All sizes one inch or less in thickness shall be counted as one inch thick.
4. In the measurement of dressed lumber the width and thickness of the lumber before dressing must be taken, less than one inch thick being considered one inch.
5. When the term "per cent." is used, reference is made to pieces; for example: "80 per cent. free from knots" means that 80 of every 100 pieces shall be free from knots.
6. The limitation as to size and number of knots refers to the heart face. In the measurement of knots the average diameter must be taken. The distribution of knots need not be proportionate, i. e., one knot to each six feet or fraction thereof, means that a piece 24 feet long may have four knots anywhere in the piece and not one knot in each separate six feet. The allowance of one knot $1\frac{1}{2}$ inches in diameter to six feet means that the piece may have one knot $1\frac{1}{2}$ inches or a greater number of less than $1\frac{1}{2}$ inches, but not exceeding the equivalent. In the limitations as to size, number and percentage free from knots, no account shall be taken of knots one-half (or less) of the diameter of the maximum knot allowed in the grade, or if, no knots are allowed, of the maximum knot in the next grade below; provided, that knots by this exception shall not exceed three-fourths inch in diameter.
7. In dimension where wane is allowed it shall not exceed one inch wide on the smallest size, allowing one-half an inch increase to every inch increase in the dimension. Wane allowed may be anywhere on the corner and need not be continuous, but the aggregate must not exceed the total allowance. The larger calculation of the piece must be taken in the calculation of wane. Wane shall be measured across its face.
8. When there is a percentage free from knots or centers reference is made to the least thickness, the percentage to be decreased 10 for each inch increase in the thickness, and proportionately for fractions of inches.

FLOORING.

SIZES.

1x3, 1x3½, 1x4, 1x4½, 1x5, 1x6, 1x7.
 1¼x3, 1¼x3½, 1¼x4, 1¼x4½, 1¼x5, 1¼x6, 1¼x7.
 1½x3, 1½x4, 1½x5, 1½x6.
 1¾x3, 1¾x4, 1¾x5, 1¾x6.

GRADES.

Rift, Special, Extra, Prime, Heart, Standard, Merchantable and Square Edge.

RIFT.

No. 1—Must be all heart with exception of one inch sap on one corner, rift grain the entire length, free from splits, shakes and knots, and the heart face free from pitch pockets and resin streaks.

No. 2—Must be one heart face, rift grain the entire length, free from splits, shakes and knots exceeding one half inch; provided, that 50 per cent. shall be free from knots, pitch pockets and resin streaks on the heart face.

SPECIAL.

Must be bright, one heart face, free from splits, shakes and centers. Not to have more than one knot in one inch on the 3, 3½, 4 and 4½ inches, or one knot 1¼ inches on the 5, 6 and 7 inch to each 6 feet or fraction thereof; provided, that 90 per cent. shall be free from knots.

EXTRA.

Must be one heart face, free from pith on the faces, splits and shakes, and Prime as to knots, except that 80 per cent. shall be free from knots

PRIME.

Must be one heart face, and show heart the entire length on other face, free from pith on the faces, splits and shakes. Not to have more than one knot one inch on the 3, 3½, 4 and 4½ inch, or one knot 1¼ inch on the 5, 6 and 7 inch to each 6 feet or fraction thereof; provided, that 70 per cent. shall be free from knots.

HEART.

Must be all heart.

STANDARD.

Must be one heart face.

MERCHANTABLE.

Must be one heart face with exception of one-half inch sap on the 3 and 4 inch or one inch on the 5, 6 and 7 inch. Not to have more than one knot one inch on the 3, 3½, 4 and 4½ inch, or one knot 1¼ inch on the 5, 6 and 7 inch to each 6 feet or fraction thereof.

Note.—Merchantable corresponds to New York Merchantable Siding.

SQUARE EDGE.

General Rules, 2 paragraph.

BOARDS AND PLANKS.**SIZE OF BOARDS.**

1x8 and up, 1¼x8 and up, 1½x7 and up, 1¾x7 and up.

SIZE OF PLANK.

2x7 and up, 2¼x7 and up, 2½x7 and up, 2¾x7 and up.

GRADES.

Stepping, Special, Extra, Prime, Heart, Standard, Merchantable and Square Edge.

STEPPING.

Must be three corners heart, free from pith on the faces, splits and shakes. Not to have more than one knot one-half inch on the 7 to 10 inch, or one knot three-fourths inch on the 11 inch and up to each 6 feet or fraction thereof; provided, that 50 per cent. shall be free from knots.

SPECIAL.

Boards.—Must be bright, one heart face, except sap one inch wide, free from splits, shakes and centers. Not to have more than one knot one inch on the 7 to 10 inch, or one knot 1¼ inch on the 11 inch and up to each 6 feet or fraction thereof; provided, that 90 per cent. shall be free from knots.

Planks.—Must be bright, one heart face, except sap one inch wide, free from splits, shakes and centers. Not to have more than one knot 1¼ inch on the 7 to 10 inch, or one knot 1½ inch on the 11 inch and up to each 6 feet or fraction thereof; provided, that 80 per cent. shall be free from knots.

EXTRA.

Must be Prime; provided, that 70 per cent. be free from knots.

PRIME.

Boards.—Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from pith on the faces, splits and injurious open shakes. Not to have more than one knot 1½ inches on the 7 to 10 inch, or one knot 1¾ inch on the 11 inch and up to each 6 feet or fraction thereof.

Planks.—Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from pith on the faces, splits and injurious open shakes. Not to have more than one knot 1½ inch on the 7 to 10 inch, or one knot 1¾ inch on the 11 inch and up to each 6 feet or fraction thereof.

HEART.

Must be all heart.

STANDARD.

Must be one heart face and two-thirds heart surface on the other face, except that the twelve-inch may have one-inch sap on each edge of the heart face, and twelve inches and up one and a half inches.

MERCHANTABLE.

The seven to nine-inch must be one heart face and show heart on other face, and the ten-inch and up must be two-thirds heart surface on both faces.

NOTE.—Standard seven to nine-inch and Merchantable ten-inch and up correspond to Savannah Merchantable.

SQUARE EDGE.

General Rules, 2 paragraph.

DEALS.**Sizes.**

3x9 and up, 4x9 and up, 5x9 and up, 6x9, 6x10, 6x11, 6x12, 6x13.

GRADES.

Choice, Special, Extra, Prime, Heart, Standard, Merchantable and Square Edge or Stowage.

CHOICE.

Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from splits and injurious open shakes, and 80 per cent. from centers. Not to have more than 1 knot $1\frac{1}{2}$ inch on the 3 and 4-inch, or 1 knot $1\frac{3}{4}$ inch on the 5 and 6-inch to each 6 feet or fraction thereof.

SPECIAL.

Must be bright one heart face, free from splits, shakes and centers. Not to have more than 1 knot $1\frac{1}{2}$ inch on the 3 and 4-inch or 1 knot $1\frac{3}{4}$ inch on the 5 and 6-inch to each 6 feet or fraction thereof; provided that 70 per cent. shall be free from knots.

EXTRA.

Must be Prime; provided that 60 per cent. shall be free from knots and 80 per cent. free from centers.

PRIME.

Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from injurious open shakes and knots exceeding 2 inches on the 3 and 4-inch or $2\frac{1}{4}$ on the 5 and 6-inch.

HEART.

Must be all heart.

STANDARD.

Must be one heart face and two-thirds heart surface on the other face, except that the 12-inch may have 1 inch sap on each edge of the heart face, and 13-inch and up to $1\frac{1}{2}$ inches.

MERCHANTABLE.

The 9-inch must be one heart face and show heart on the other face, and the 10-inch up must be two-thirds heart surface on both faces.

NOTE.—Standard 9-inch or Merchantable 10-inch and up correspond to Savannah Merchantable.

SQUARE EDGE OR STOWAGE.

General Rule, 2 paragraph.

SCANTLING—SIZES.

2x2, 2x3, 2x4, 2x5, 2x6; 3x3, 3x4, 3x5, 3x6, 3x7, 3x8; 4x4, 4x5, 4x6, 4x7, 4x8; 5x5, 5x6, 5x7, 5x8.

GRADES.

Decking, Special, Extra, Prime, Heart, Standard, Merchantable and Square Edge.

DECKING.

Must be all heart, free from splits, shakes, centers and corner knots. The 2x2, 2x3 and 2x4 to have no knots exceeding three quarters of an inch, the 2x5, 2x6, 3x3, 3x4, 3x5 and 3x6 exceeding one inch and other sizes exceeding one and a half inches.

SPECIAL.

Must be bright three corners heart, free from splits, shakes and centers. The 2x2, 2x3 and 2x4 to have no knots exceeding one inch, the 2x5, 2x6, 3x3, 3x4, 3x5 and 3x6 exceeding one and a quarter inches, and other sizes exceeding one and three-quarter inches, provided that 80 per cent. shall be free from knots.

EXTRA.

Must be three corners heart and have not more than one inch sap on the other corner, free from splits and injurious open shakes. The 2x2, 2x3 and 2x4 to have no knots exceeding one and one-quarter inches and the other size exceeding two inches.

NOTE—Extra corresponds to Savannah prime and prime to Savannah merchantable.

PRIME.

Must be three corners heart.

HEART.

Must be all heart.

STANDARD.

Must be one heart face, and one edge two-thirds heart surface, showing heart entire length.

MERCHANTABLE.

Must show heart on two sides the entire length.

SQUARE EDGE.

General Rules, 2 paragraph.

DIMENSION—SIZES.

A	B		C
6x6	6x7	6x8	6x14 and up
7x7	7x8	7x8	7x10 and up
8x8	8x9	8x10	8x11 and up
9x9	9x10	9x11	9x12 and up
10x10	11x11	10x12	10x13 and up
11x11	11x12	11x13	11x14 and up
12x12	12x13	12x14	12x15 and up
13x13	13x14	13x15	13x16 and up
Etc.	Etc.		Etc.

GRADES.

Choice, Special, Extra, Prime, Heart, Standard, Merchantable and Square Edge.

CHOICE.

Sizes A.—The sap on each corner shall not exceed one-sixth the width of the face.

Sizes B.—On wide faces the sap on each corner shall not exceed one-sixth the width of the face, and narrow faces shall show one-half heart the entire length.

Sizes C.—On wide faces the sap on each corner shall not exceed one-sixth the width of the face, and narrow faces shall show heart the entire length.

Note.—Choice corresponds to Savannah prime and prime to Savannah merchantable.

SPECIAL.

Must be bright, the sap on each corner not to exceed one-sixth the width of the face, free from splits and shakes, and the six and seven-inch free from center and knots exceeding two inches.

EXTRA.

Must show two-thirds heart surface on two sides, and show heart entire length on all four sides.

PRIME.

Sizes A.—Must show two-thirds heart surface on two sides, and not less than one-half heart surface on two other sides.

Sizes B.—Must show two-thirds heart surface on face, and show heart two-thirds of the length on edges.

Sizes C.—Must show two-thirds heart surface on face, and show heart half the length on edges.

HEART.

Must be all heart.

STANDARD.

Must show two-thirds heart surface on two sides, and show heart half the length on other two sides. Sizes ten-inch or over may have wane one-fifth the length on one corner, or one-tenth on two corners.

MERCHANTABLE.

Must be square edge, except that sizes ten-inch or over may have wane one-third the length on one corner, or one-sixth on two corners, or one-ninth on three corners.

SQUARE EDGE.

General Rules, 2 paragraph.

KILN-DRIED SIDINGS.

Sizes.—1x3, 1x4, 1x5, 1x6, 1x7, 1¼x3, 1¼x4, 1¼x5, 1¼x6, 1¼x7.

GRADES—Nos. 1 and 2.

No. 1. Must be free from splits and edge knots. Not to have more than one knot one inch on the three and four-inch, or one knot one and a quarter-inch on the five, six and seven-inch to each six feet or fraction thereof; provided, that 50 per cent. shall be free from knots and sap stains on one face.

No. 2. Must be free from splits and knots exceeding one inch on the three and four-inch, or one and a quarter-inch on the five, six and seven-inch; provided, that 80 per cent. shall be free from knots and sap stains on one face. May have one and a half-inch wane on one corner extending on edge three-eighths of an inch.

AIR-DRIED SAPS.

Sizes.—1x3, 1x4, 1x5, 1x6, 1x7, 1¼x3, 1¼x4, 1¼x5, 1¼x6, 1¼x7.

GRADES—STANDARD.

Must be free from splits and knots exceeding one inch on the three and four-inch, or one and a quarter inch on the five, six and seven inch; provided, that 80 per cent. shall be free from knots on one face. May have one and a half-inch of wane on one corner extending on edge three-eighths of an inch.

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THE HARDWOOD MANUFACTURERS' ASSOCIATION OF THE UNITED STATES.

Association Standard Grades of Hardwood, Poplar, Cottonwood and Gum;
Classification, Official Grading and Inspection Rules.

RULES AND GENERAL INSTRUCTIONS.

Hardwood.

1. The inspection of lumber is largely a matter of judgment, and these rules are intended to define in a general way such inspection.

2. Exceptions to the general rule of grading will be found under the heading for each kind of lumber.

3. Lumber must be inspected and measured as the inspector finds it, of full length and width. He shall make no allowance for the purpose of raising the grade.

In inspecting all lumber both sides of the piece shall be taken into consideration in making the grade; bearing in mind that 90 per cent. of all lumber only shows one face when finished.

4. Lumber shall be well manufactured, of even thickness, and have parallel edges, and all ragged and bad ends shall be trimmed off.

5. Tapering lumber shall be measured at one-third the length of the board from the narrow end, excepting Dimension Strips, which shall be measured at the narrow end.

6. All lumber shall be tallied surface or face measure, the tally counted up, and the one-quarter or one-half added to the total where the lumber is one and one-quarter or one and one-half inches thick, and two inches and thicker to be multiplied by the thickness.

In the measurement of all lumber, fractions exactly on the one-half foot are to be given alternately to the buyer and seller; the fractions below the one-half foot are to be dropped, and all fractions above the half foot are to be counted to the next higher figure on the board rule.

7. The standard lengths are four to sixteen feet. Standard thicknesses are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3 and 4 inches when dry.

STANDARD DEFECTS.

8. Each one of the following items constitute a standard defect:

(a) One knot one and one-quarter inches in diameter.

(b) Two knots not exceeding in extent one standard knot.

(c) Worm holes, grub holes, or rafting pin holes not exceeding in extent or damage one standard knot.

(d) Heart shakes, rot or dote not exceeding in extent or damage one standard knot.

(e) Splits are not to exceed twelve inches in length in firsts, or one-sixth the length of the piece in seconds; in the aggregate not more than 20 per cent, of the whole in either quality may be so split.

(f) Sap to one-fifth the width of the board in the aggregate.

(g) One bark edge or wane not to exceed one inch in the aggregate, running not to exceed one-third the length of the board, and only showing on one side and to be measured.

Explanations of Standard Defects.

9. (a) Ordinary season checks are not to be considered defects.

(b) Black stain is not a defect if planing it once will remove it.

(c) Sap shall be considered bright that will show bright after planing.

(d) Splits that do not diverge more than one inch for each foot in length are straight splits.

(e) A straight split not exceeding six inches in length in one end of a piece of lumber, eight inches and over wide, shall not be considered a defect.

(f) Sound heart in firsts and seconds if longer than the width of the piece will reduce it to the next lower grade.

(g) In grades below first and second, boards with one clear face eight inches and over wide shall be raised one grade.

(h) The location of defects in a piece has much to do with its value, and should have great weight in deciding the grade.

(i) Wide pieces of lumber that would take two or three standard knots may have one large knot, equal to two or three standard knots if there are no other defects.

(j) The rules for the inspection of lumber are intended to define the poorest piece that will go in a given grade. Where the defects are slightly beyond the specifications, making it a line board, twelve foot and longer lengths should be given advantage in grade; ten foot and shorter lengths reduced.

(k) All widths and lengths mentioned in these rules shall be inclusive.

STANDARD GRADES.

FIRSTS AND SECONDS.

Firsts and Seconds are combined as one grade. **Firsts** shall be six inches and over wide, ten, twelve, fourteen and sixteen feet long, and free from all defects except in pieces eight inches and over wide, which will admit of one standard defect. **Seconds** are six inches and over wide, eight to sixteen feet long; six and seven inches wide will admit of one standard defect; pieces eight, nine and ten inches wide will admit of two standard defects; pieces eleven, twelve and thirteen inches wide will admit three standard defects, except 10 foot lengths which will admit two defects. As widths increase defects may increase in proportion. This grade will admit 15 per cent. of ten foot and 5 per cent. of eight foot lengths. Eight foot lengths must grade first in quality.

No. 1 COMMON.

The lengths are six to sixteen feet, not to exceed 10 per cent. of six-foot lengths. The widths are four inches and over.

Four and five inches will admit one standard knot or equal defects.

Six to eleven inches wide, eight and ten feet long, must work two-thirds clear face in not over two pieces.

Twelve inches and over wide, eight and ten feet long, must work two-thirds clear face in not over three pieces.

Six to eleven inches wide, twelve feet and over long, must work two-thirds clear face in not over three pieces.

Twelve inches and over wide, twelve feet and over long, must work two-thirds clear face in not over four pieces.

No piece or cutting to be considered which is less than four inches wide and three feet long, but as the width increases the length may decrease, but the shortest cutting to be considered must be eighteen inches long and not less than eight inches wide. Two-thirds of this grade must be six inches and over wide. Pieces six feet long must be clear up to 8 inches wide; over 8 inches wide will admit one standard defect.

No. 2 COMMON.

The lengths are four to sixteen feet. The widths are three inches and over. Pieces four feet long must be clear. Pieces six feet long and longer must cut 50 per cent. clear faced.

No piece or cutting to contain less than one foot face measure.

No. 3 COMMON.

The lengths are four to sixteen feet. The widths are three inches and over, and must contain at least 25 per cent. clear face cutting. No piece or cutting to contain less than one-half foot face measure.

No. 4 COMMON.

No. 4 Common shall include all lumber not up to the grade of No. 3 Common that can be used for cheap fencing, boxing, sheathing, etc.

There shall be no clear cutting required in this grade.

Sound worm holes are not to be considered defects.

SCOOTs.

Shall include all lumber which falls below No. 4 Common.

LOG RUN.

Means the full run of the log with all grades below No. 3 Common out.

COMMON AND BETTER.

Means the full run of the log with all grades below No. 1 Common out. This grade must contain at least 25 per cent. of Firsts and Seconds.

SPECIAL INSPECTION.

Lumber sawed for specific purposes, such as Axles, Bolsters, Tongues, Reaches, etc., must be inspected with a view to the adaptability of the piece for its intended use, because in most cases it can not be used for other purposes.

CAR AND DIMENSION OAK.

The standard lengths for this stock are as follows: 8, 9, 10, 12, 14 and 16 feet.

Dimension sawed Common Oak Plank and timbers used for car and building purposes must be free from wind shakes, dry rot, rotten knots, or defects which impair the strength of the piece. Sound hearts in this material shall be considered no defect.

PLAIN SAWED RED AND WHITE OAK.

Firsts and Seconds. Bright Sap up to one-half of the width of the board in the aggregate on one side is not a defect.

Common. Bright sap is no defect in Common grade.

Clear Face Strips. Eight to sixteen feet. $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5 and $5\frac{1}{2}$ inches wide must show one face clear of all defects except bright sap which shall not be considered a defect.

QUARTER SAWED RED AND WHITE OAK.

Firsts and Seconds. One inch of bright sap is not a defect in pieces eight inches and over wide.

Common. Four-inch pieces allow one standard defect. Five-inch pieces allow two standard defects. Bright sap is no defect.

Clear Face Strips are 8 to 16 feet long, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5 and $5\frac{1}{2}$ inches wide, and must show one face clear of all defects except one-half inch of bright sap.

Common Strips are six feet and over long, not to exceed 40 per cent. shorter than twelve foot and must work two-thirds clear face in not more than two pieces; no cutting to be less than four feet long by the full width of the piece. Bright sap is no defect in this grade.

NOTE.—Stain and streaks in quarter sawed Oak will often reduce it below the grade of Firsts and Seconds, and Inspectors are cautioned to be careful in estimating such defects.

All quarter sawed oak must show figure on one face.

Ten per cent. of scant lumber allowed if not more than one-sixteenth of an inch scant on the heart edge, if the sap edge is full thickness.

ASH.

Firsts and Seconds. Bright sap is no defect. Five-inch widths admitted when the length is eighteen feet and over.

Clear Face Strips. Same as plain oak.

QUARTER SAWED SYCAMORE.

Common. Bright sap no defect.

PLAIN SAWED SYCAMORE.

Bright sap is no defect in any grade.

HICKORY AND PECAN.

Firsts and Seconds. Bright sap is no defect. Pieces four and five inches wide in this grade must be clear.

BEACH, BASSWOOD, MAPLE, ROCK ELM AND SOFT ELM.

Bright sap is no defect in any grade.

BIRCH.

Bright sap is no defect in any grade.

Red Birch shall not be less than 75 per cent. red on face side.

Four and five-inch strips shall have one face all red.

BUTTERNUT.

Standard grading.

WIDE—No. 1.

Lengths, 10 to 20 feet, admitting ten per cent. of 10 feet.

Widths, 18 to 23 inches, 24 to 27 inches and 28 inches and over.

Thicknesses, $\frac{5}{8}$ inch and 1 inch.

In boards 18 to 23 inches 50 per cent. of bright sap will be admitted provided there are no knots, otherwise three standard defects admitted. In boards 24 inches and over, bright sap shall not be considered a defect, and these widths will admit three standard defects, separate or bunched, in addition thereto.

Splits admitted not to exceed fifteen inches in not to exceed ten per cent. of the pieces.

WIDE—No. 2.

Lengths, 10 to 20 feet, admitting ten per cent. of 10 feet.

Widths, 18 to 23 inches, 24 to 27 inches and 28 inches and over.

Thicknesses $\frac{5}{8}$ inch and 1 inch.

Bright sap no defect.

Eighteen inches may contain five standard defects and one additional defect for each two inches of additional width.

Splits equal in length to width of the board are admitted in not to exceed ten per cent. of boards, and are counted as a defect.

FIRSTS AND SECONDS.

Lengths 10 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, 7 to 17 inches.

Standard thicknesses.

In the combined grade of Firsts and Seconds, fifty per cent. must be Firsts and fifty per cent. may be Seconds.

Firsts shall be eight inches and over wide.

Eight to nine inches must be clear.

Ten to eleven inches will admit one inch of bright sap.

Twelve to fourteen inches will admit one standard knot and two inches of bright sap, or four inches of bright sap if there are no knots or equal defects.

Fifteen to seventeen inches will admit two standard knots, or one standard knot and three inches of bright sap, or four inches of bright sap if there are no knots or equal defects.

Seconds shall be seven inches and over wide.

Seven inches must be clear.

Eight inches will admit of one inch of bright sap.

Nine to eleven inches will admit one standard knot and one inch of bright sap, or three inches of bright sap, or equal defects.

Twelve to fourteen inches will admit two standard knots and two inches of bright sap, or one standard knot and four inches of bright sap, or five inches of bright sap if there are no knots or equal defects.

Fifteen to seventeen inches will admit three standard knots or two standard knots and three inches of bright sap, or six inches of bright sap if there are no knots or equal defects.

Splits not to exceed in length the width of the board in Firsts and Seconds and not over 20 per cent. of the whole in either quality may be so split.

SELECTS.

Lengths 10 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, 6 inches and over.

Standard thicknesses: One inch to four inches.

Selects shall include the following different kinds of boards:

1. A board having a face side as good as a Second, the other side must be as good as a No. 1 Common.

2. A board having a face side as good as a First, the other side must be as good as a No. 2 Common.

Sun checks admitted on the poor side of this board.

3. A board that has one more standard defect than would admit it to a Second.

Examples:

(a) A board six to seven inches wide with one standard knot or equal defect.

(b) A board eight inches wide with one inch of bright sap and one standard knot or equal defects.

(c) Boards nine to eleven inches wide with two inches of bright sap and one standard knot or equal defects, and accordingly as widths increase.

Splits not to exceed in length the width of the board in this grade and not over 20 per cent. of the whole may be so split.

SAPS.

Lengths, 10 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, four inches and over.

Standard thicknesses: $\frac{3}{8}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 inches.

Saps shall be clear of knots up to ten inches in width.

Eleven and twelve inches will admit one standard knot.

Thirteen inches and over will admit two standard knots.

Splits not to exceed the width of the board up to ten inches are admitted. Boards over ten inches in width will admit a split one-sixth the length of the board, if there are no other defects.

No. 1 COMMON.

Lengths, 8 to 20 feet, admitting not to exceed five per cent. of 8 feet, and fifteen per cent. of 10 feet.

Widths, 5 inches and over.

Standard thicknesses: $\frac{5}{8}$ to four inches.

Bright sap shall not be considered a defect.

Sound discolored sap one-third of the board admitted.

No. 1 Common shall be inspected to grade according to the percentage of clear face rippings and cuttings as shown below, subject to the restrictions on the reverse side of said cuttings and rippings, as hereinafter stated.

The reverse side of any ripping or cutting may contain defects, excepting splits, which will not exceed two inches in the aggregate.

The following table explains fully how the width and length of boards are to grade:

5 inches	{	8 to 14 feet long shall cut 90% in 2 pieces. 16 feet and longer shall cut 90% in 3 pieces.
6 to 7 inches	{	8 to 10 feet long shall cut 85% in 2 pieces. 12 feet and longer shall cut 85% in 3 pieces.
8 to 9 inches	{	8 to 10 feet long shall cut 75% in 2 pieces. 12 to 16 feet long shall cut 75% in 3 pieces. 18 to 20 feet long shall cut 75% in 4 pieces.
10 to 12 inches	{	8 to 10 feet long shall cut 70% in 2 pieces. 12 to 14 feet long shall cut 70% in 3 pieces. 16 to 18 feet long shall cut 70% in 4 pieces. 20 feet long shall cut 70% in 5 pieces.
13 inches and wider	{	8 to 10 feet long shall cut 66 $\frac{2}{3}$ % in 3 pieces. 12 to 14 feet long shall cut 66 $\frac{2}{3}$ % in 4 pieces. 16 to 18 feet long shall cut 66 $\frac{2}{3}$ % in 5 pieces. 20 feet long shall cut 66 $\frac{2}{3}$ % in 6 pieces.

No. 2 COMMON.

Lengths, 8 to 20 feet, admitting not to exceed five per cent. of 8 feet, and fifteen per cent. of 10 feet.

Widths, 4 inches and over.

Standard thicknesses: $\frac{5}{8}$ to 4 inches.

No. 2 Common shall include all lumber that will not come up to the grade of **No. 1 Common** and that will work one-half of the piece into sap or clear face rippings and cuttings. No cutting to be less than four inches wide and less than two feet in length.

Bright sap and sound discolored sap is not to be considered a defect in this grade.

No. 3 COMMON.

Lengths, 6 to 20 feet, admitting not to exceed five per cent. of 6 feet, ten per cent. of 8 feet and ten per cent. of 10 feet.

Widths, 3 inches and over.

Standard thicknesses: $\frac{5}{8}$ to 4 inches.

No. 3 Common must contain at least one-half of sound rippings and cuttings, remainder of the board to be as good as a **No. 4 Common**. No cutting to be less than three inches wide and less than two feet in length.

A ripping or cutting shall be considered sound containing sound knots on face side. Sound discolored sap is not a defect in this grade.

No. 4 COMMON.

Standard thicknesses: $\frac{5}{8}$ to 2 inches.

No. 4 Common shall include all lumber not up to the grade of **No. 3 Common**, that can be used for rough boxing, sheathing, etc. Worm holes are not to be considered defects, and unsound lumber with sufficient substance to hold nails admitted.

SCOOTs.

Standard thickness: 1 inch.

Scoots shall include all lumber that will not come up to the grade of No. 4 Common.

WAGON BOX BOARDS.

Lengths, 12, 14 and 16 feet.

Widths, 8 to 12 inches, and 13 to 17 inches.

Thickness, one inch.

In Box Boards bright sap or slightly discolored sap that will dress up sound, not necessarily bright but not black, admitted.

One sound knot not to exceed one inch in diameter, showing on one side only, will be admitted in this grade.

Splits in 12-foot may be fifteen inches long, or any defect that will cut off leaving the board 10 feet 6 inches long. 14-foot is used for making one side 10 feet 6 inches, and one end 3 feet 6 inches, so a split is a serious defect in this length; but ten per cent. of all 14-foot in a given lot may have one split not to exceed 12 inches in length. 16-foot may have one standard knot, showing through the piece, provided it will cut two pieces same as a 14-foot board.

QUARTERED POPLAR, Nos. 1 AND 2.

Lengths, 10 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, 5 inches and over.

Thicknesses: 1 inch and $1\frac{1}{4}$ inches.

Defects in this kind of Poplar differ from those in plain sawn, and consist largely of spike knots and open gum spots.

Firsts and Seconds shall be a combined grade.

Five inches must be clear.

Six to seven inches, ten and twelve feet long, will admit two knots showing one inch space on edge, or one knot condensed not exceeding a two-inch space.

Six to seven inches, fourteen feet and longer, will admit three knots showing one inch space on edge, or one or two defects condensed not exceeding three inches of space.

Eight to nine inches, ten and twelve feet long, will admit two knots showing one and one-half inches in space on edge, or one defect condensed not exceeding three inches in space.

Eight to nine inches, fourteen feet and longer, will admit three knots one and one-half inches in space on edge, or one or two defects condensed not exceeding the same.

Ten inches and wider, ten and twelve feet long, will admit two knots two inches in space on edge, or one defect condensed not exceeding the same.

Ten inches and wider, fourteen feet and longer, will admit three knots two inches in space on edge, or one or two defects condensed not exceeding the same.

QUARTERED POPLAR, COMMON.

Lengths, 8 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, 4 inches and over.

Thicknesses: 1 inch and $1\frac{1}{4}$ inches.

4 inches, 8, 10 and 12 feet long, must cut 85% clear face cutting in 2 pieces; 14 feet and longer must cut 85% clear face cutting in 3 pieces.

5 to 6 inches, 8 to 10 feet long, must cut 80% clear face cutting in 2 pieces; 12 to 14 feet long must cut 80% clear face cutting in 3 pieces; 16 feet long must cut 80% clear face cutting in 4 pieces; 18 to 20 feet long must cut 80% clear face cutting in 5 pieces.

7 to 8 inches, 8, 10 and 12 feet long, must cut 70% clear face cutting in three pieces; 14 to 16 feet long must cut 70% clear face cutting in 4 pieces; 18 to 20 feet long must cut 70% clear face cutting in 5 pieces.

9 inches and wider, 8, 10 and 12 feet long, must cut $66\frac{2}{3}\%$ clear face cutting in 3 pieces; 14 to 16 feet long must cut $66\frac{2}{3}\%$ clear face cutting in 4 pieces; 18 feet long must cut $66\frac{2}{3}\%$ clear face cutting in 5 pieces; 20 feet long must cut $66\frac{2}{3}\%$ clear face cutting in six pieces.

STRIPS.

Lengths, 10 to 20 feet, admitting not to exceed fifteen per cent. of 10 feet.

Widths, 4, 5 and 6 inches.

A—Strips shall be clear of all defects excepting one inch of bright sap showing only on one face.

B—Strips, bright sap admitted without limit or in the absence of sap two sound knots not to exceed $\frac{3}{4}$ inch in diameter or one standard knot.

C—Strips will admit of bright or sound discolored sap without limit or three standard knots or their equivalent in smaller knots.

SQUARES.

Lengths, 8, 9, 10, 12, 14, 16, 18 and 20 feet.

Sizes, 4x4, 5x5, 6x6, 7x7, 8x8, 9x9, 10x10 and 12x12.

Firsts and Seconds—A combined grade.

Firsts are to be sound and free from hearts, shakes and checks.

4x4, 8 to 12 feet long, may contain one standard knot or two inches of bright sap on two edges.

4x4, 14 feet and longer, may contain one standard knot and two inches of bright sap on two edges.

5x5 and 6x6, 8 to 12 feet long, may contain one standard knot and two inches of bright sap on two edges.

5x5 and 6x6, 14 feet and longer, may contain two standard knots or three inches of bright sap on two edges.

7x7, 14 feet and longer, may contain two standard knots and three inches of bright sap on two edges.

7x7, 8 to 12 feet long, may contain two standard knots or three inches of bright sap on two edges.

8x8, 8 to 12 feet long, may contain three standard knots or three inches of bright sap on two edges.

8x8, 14 feet and longer, may contain three standard knots and three inches of bright sap on two edges.

9x9, 8 to 12 feet long, may contain four standard knots or three inches of bright sap on two edges.

9x9, 14 feet and longer, may contain four standard knots and three inches of bright sap on two edges.

10x10 and 12x12, 8 to 12 feet long, may contain five standard knots or four inches of bright sap on two edges.

10x10 and 12x12, 14 feet and longer, may contain five standard knots and four inches of bright sap on two edges.

Seconds will admit all knots as described in Firsts, but bright sap shall be admitted without limit. If there are no knots one-third sound discolored sap shall be admitted or slight season checks on either side.

COMMON SQUARES.

Common Squares will include all Squares not up to the grade of Firsts and Seconds that will cut two-thirds their length clear in short pieces that can be used for newells and short turnings, or will admit of stained sap without limit, if they have no more defects than would go in a Second, or will admit of seasoning checks running full length on two sides.

DRESSED POPLAR.

1. Dressed Poplar shall be inspected from the best or face side.
2. Defective dressing on reverse side admitted.
3. Slightly chipped grain on the face side admitted, provided it does not exceed six inches square in Firsts and Seconds, and twelve inches square in Saps and Selects in the aggregate.
4. Imperfect manufacture in dressed stock, such as torn grain, broken knots, mismatched, insufficient tongue or groove, shall be considered defects and will reduce the grade accordingly.
5. Partition, ceiling, flooring or drop-siding, having less than three-sixteenths inch tongue shall not be admitted in any grade above No. 2 Common.
6. Wane on the reverse side not exceeding one-third the width and running not to exceed one-sixth the length of any piece, provided the wane does not extend into the tongue, or over one-half the thickness below the groove will be admitted.

STANDARD SIZES OF DRESSED POPLAR.

Finishing: $\frac{1}{2}$ inch S. 2 S., 5-16 inch; $\frac{5}{8}$ inch S. 2 S., 7-16 inch; $\frac{3}{4}$ inch S. 2 S., 9-16 inch; 1 inch S. 2 S., 13-16 inch; $1\frac{1}{4}$ inches S. 2 S., 1 3-32 inches; $1\frac{1}{2}$ inches S. 2 S., 1 11-32 inches; 2 inches S. 2 S., $1\frac{3}{4}$ inches.

Casing and Base: Dressed to 13-16 inch thick; $3\frac{1}{2}$ inches, $4\frac{1}{2}$ inches, $5\frac{1}{2}$ inches, $6\frac{1}{2}$ inches, $7\frac{1}{2}$ inches, $8\frac{1}{2}$ inches, $9\frac{1}{2}$ inches and $11\frac{1}{2}$ inches wide.

Flooring and Partition: Dressed to 13-16 inch thick; $2\frac{1}{4}$ inches, $3\frac{1}{4}$ inches, $4\frac{1}{4}$ inches and $5\frac{1}{4}$ inches face width. Where $3\frac{1}{2}$ inches face stock is wanted it shall be counted $4\frac{1}{4}$ inches strip count.

Ceiling: $\frac{3}{8}$ inch dressed to 5-16 inch; $\frac{1}{2}$ inch to 7-16 inch; $\frac{5}{8}$ inch to 9-16 inch; $\frac{3}{4}$ inch to 11-16 inch; same widths as partition.

BEVEL SIDING.

Standard lengths to be four foot and over, with not more than 10% under eight foot.

Bevel Siding made from 1x4, 5 and 6 inch strips, S. 4 S., to 27-32x3³/₈, 4³/₈ and 5³/₈ inches, and resawed on a bevel.

Bevel Siding: No. 1 must be practically free of defects except one inch of sap or one or two knots on thin edge that will be covered by lap.

Selects: Bright sap admitted without limit, or in the absence of sap, two sound knots not to exceed three-quarters inch in diameter or one standard knot.

No. 1 Common: Will admit bright or sound discolored sap without limit, or three standard knots or their equivalent in smaller knots.

No. 2 Common: Will admit all pieces that will not come up to the grade of No. 1 Common, which can be used for cheap siding without waste of more than one-third the length of any one piece. Pin worm holes admitted.

DROP SIDING.

Drop siding, same grades and lengths as bevel siding and shall be same widths as partition and worked to three-quarters inch thick.

CASING AND BASE.

Casing and Base: Firsts and Seconds must be practically clear on face side.

Seven to nine inches, one inch of bright sap and ten to twelve inches, one and one-half inches of bright sap will be admitted on one edge showing on face side.

Saps and Selects: Bright sap admitted without limit, or in the absence of sap, one sound knot, not exceeding three-quarters inch in diameter, will be admitted in stock eight inches and under, or one standard knot in stock nine inches and over.

No. 1 Common: Will include all stock that will not come up to the grade of Saps and Selects that will work two-thirds of its length clear, regardless of sap. Stained sap without limit, where there are no other defects admitted in this grade.

PARTITION, FLOORING AND CEILING.

No. 1: Must be clear of all defects except bright sap.

No. 1 Common: Will admit stained sap without limit, or clear sap and one small knot, not exceeding three-quarters inch in diameter, or two small knots, or one standard knot if there is no sap.

No. 2 Common: Will include all stock that will not come up to the grade of No. 1 Common that can be used for check work without waste of more than one-third the length of any one piece. Pin worm holes admitted.

Yellow Face Stock is a special grade in partition, flooring and ceiling.

MOULDINGS.

Mouldings shall be based on the National Moulding Book.

WEIGHTS POPLAR BOARDS AND PLANKS.

	Lbs. per M.
1 inch, and thicker, rough.....	2,800
1 inch, and thicker, S. 2 S.....	2,200
3 ³ / ₈ inch, rough	1,000
1 ¹ / ₂ inch, rough	1,400
1 ¹ / ₂ inch, S. 2 S. to 3 ³ / ₈ inch.....	1,000
5 ³ / ₈ inch, rough	1,600
5 ³ / ₈ inch, S. 2 S. to 1 ¹ / ₂ inch.....	1,300
3 ¹ / ₄ inch, rough	2,100
3 ¹ / ₄ inch, S. 2 S. to 5 ³ / ₈ inch.....	1,600
1 inch dressed to 3 ¹ / ₄ inch.....	2,000
1 inch re-sawed, rough.....	2,400
Bevel Siding	900
Drop Siding	2,000
3 ³ / ₈ inch Ceiling	900
1 ¹ / ₂ inch Ceiling	1,200
5 ³ / ₈ inch Ceiling	1,500
7 ³ / ₈ inch Ceiling	2,000
Lath	450

CLASSIFICATION, OFFICIAL GRADING AND INSPECTION RULES FOR THE MEASUREMENT OF COTTONWOOD LUMBER.

Adopted by the Hardwood Manufacturers' Association of the United States at Nashville,
Tennessee, January 25, 1905.

GENERAL INSTRUCTIONS.

1. The question of grading and inspecting Cottonwood lumber is so much a matter of judgment to the inspector, as each piece comes before him, that no definite and positive rules can be laid down on paper by which any piece of any given lot can be inspected.
2. The variety of defects, their size and location upon a piece have such relation to each other that the inspector necessarily must depend upon his own judgment in grading, guided by the following rules, so far as they will apply practically.
3. Lumber must be inspected and measured as the inspector finds it, of full length and width. He shall make no allowance for the purpose of raising the grade.
4. In inspecting all lumber, both sides of the piece shall be taken into consideration in making the grade, bearing in mind that ninety per cent. of all lumber only shows one face when finished.
5. Lumber shall be well manufactured, of uniform thickness and have parallel edges.
6. Tapering lumber shall be measured at one-third the length of the board from the narrow end.
7. All lumber shall be tallied surface or face measure, tally counted up, and the one-fourth or one-half added to the total where the board is one and one-quarter to one and one-half inches thick and two inches or thicker to be multiplied by the thickness.
8. In the measurement of all lumber, fractions exactly on the half foot are to be given alternately to the buyer and seller, the fractions below the one-half foot are to be dropped, and all fractions above the half foot are to be counted to the next higher figure on the board rule.
9. Splits that do not diverge more than one inch for each foot in length are to be considered straight splits.
10. Pieces thirteen inches and wider will take one large defect equal in damage to the several defects permitted in its width and grade.
11. Sap should be considered bright that will show bright after dressing.
12. The location of defects in a piece of lumber has much to do with its value, and should have great weight in deciding the grade.
13. Lumber shipped rough must be accepted on grades as shown in the rough, and not subject to any changes which may be caused by future mill-working, excepting as to the stained sap as heretofore stated.
14. All widths and lengths mentioned in these rules shall be inclusive.
15. All lumber less than one inch in thickness shall be measured surface or face measure.
16. The standard thicknesses are three-eighths, one-half, five-eighths, three-fourths, one, one and one-fourth, one and one-half, two, two and one-half, three and four inches.
17. The standard widths and lengths are as designated under the heading of each grade.

STANDARD DEFECTS.

18. Each of the following items constitutes a standard defect:
 - (a) Standard knot one and one-fourth inches in diameter.
 - (b) Two knots not exceeding in extent or damage one standard knot.
 - (c) Worm or grub holes not exceeding in extent or damage one standard knot.
 - (d) Each rafting pin hole shall be considered one standard defect.
 - (e) One bark, waney or wormy edge, not exceeding one inch in the aggregate, running not to exceed one-third the length of the board and showing on one side only, shall be considered a standard defect, and to be measured.
 - (f) Other standard defects as designated under the heading of each grade.

BOX BOARDS.

Lengths—Twelve, fourteen and sixteen feet.

Widths—Eight to twelve inches and thirteen to seventeen inches.

Thickness—One inch.

In this grade bright sap or slightly discolored sap, that will dress up sound, not necessarily bright but not black, admitted.

One sound knot not to exceed one inch in diameter, and showing on one side only, will be admitted in this grade.

Splits in twelve-foot may be fifteen inches long.

This length may also contain any defect that will cut off leaving the board ten feet six inches long. Fourteen-foot is used for making one side ten feet six inches long, and one end three feet six inches long; a split, therefore, is a serious defect in this length, but ten per cent. of all fourteen-foot in a given lot may have one split not to exceed twelve inches in length. Sixteen-foot may have one standard knot or any other defect, showing through the piece, provided it will cut two pieces same as a fourteen-foot board.

FIRSTS AND SECONDS.

Firsts and Seconds is a combined grade.

Lengths—Ten, twelve, fourteen and sixteen feet, not to exceed ten per cent, of ten feet.

Widths—Six inches and up.

Standard thicknesses—Pieces six to seven inches wide shall be clear.

Pieces eight and nine inches wide will admit one standard defect or its equivalent.

Pieces ten to twelve inches wide will admit two standard defects or their equivalent.

Pieces thirteen to fifteen inches wide will admit three standard defects or their equivalent.

Pieces sixteen to seventeen inches wide will admit four standard defects or their equivalent.

Pieces eighteen inches wide and wider will admit five standard defects or their equivalent.

In this grade straight splits shall be admitted which do not exceed in length (in inches) the surface measure of the piece in feet. Slightly discolored sap which will dress up sound, not necessarily bright but not black, shall be admitted.

No. 1 COMMON.

Lengths—Six to sixteen feet, not to exceed 10 per cent. of six-foot lengths.

Widths—Four inches and over.

Four and five inches will admit one standard knot or equal defects.

Six to eleven inches wide, eight and ten feet long, must work two-thirds clear in not over two pieces.

Twelve inches and over wide, eight and ten feet long, must work two-thirds clear in not over three pieces.

Six to eleven inches wide, twelve feet and over long, must work two-thirds clear in not over three pieces.

Twelve inches and over wide, twelve feet and over long, must work two-thirds clear in not over four pieces.

No piece or cutting to be considered which is less than four inches wide and three feet long, but as the width increases the length may decrease, but the shortest cutting to be considered must be eighteen inches long and not less than eight inches wide. Pieces six feet long must be clear up to eight inches wide; over eight inches wide will admit one standard defect.

No. 2. COMMON.

Lengths—Six to sixteen feet.

Widths—Three inches and wider.

Standard thicknesses—Pieces six to ten feet long shall work fifty per cent. sound cuttings in not over three pieces.

Pieces twelve feet or over long shall work 50 per cent. sound cuttings in not over four pieces.

No piece or cutting to be considered which is less than three inches wide and two feet long.

No. 3 COMMON.

Lengths—Four to sixteen feet.

Widths—Three inches and wider.

Standard thicknesses—Pieces four feet or over long shall work at least twenty-five per cent. sound cutting.

No piece of cutting to be considered which is less than three inches wide and two feet long.

No. 4 COMMON.

No. 4 Common shall include all lumber not up to the grade of No. 3 Common, that can be used for rough boxing, sheathing, etc. Worm-holes are not to be considered a defect. Unsound lumber with sufficient substance to hold nails admitted.

SQUARES.

No. 1 shall be practically clear of knots.

No. 2 shall admit of sound knots, stained sap, small season checks, splits not exceeding twelve inches in length, and pin worm holes.

DRESSED COTTONWOOD.

1. Dressed Cottonwood shall be inspected from the best or face side.
2. Defective dressing on the reverse side admitted.
3. Slightly chipped grain on the face side admitted, provided it does not exceed in the aggregate six inches square in Firsts and Seconds, eight to twelve inches wide; ten inches square in Firsts and Seconds, thirteen inches and wider; twelve inches square in No. 1 Common, six to twelve inches wide; sixteen inches square in No. 1 Common, thirteen inches and wider.
4. Imperfect manufacture in dressed stock, such as torn grain, broken knots, mismatching, insufficient tongue and groove shall be considered defects and reduce the grade accordingly.

BEVEL SIDING.

First grade shall be known as No. 1, which shall be absolutely clear face, except small defects within one inch of the thin edge.

Second grade shall be known as No. 2, which will admit slightly discolored sap, or three sound knots, not to exceed three-quarters of an inch in diameter.

Third grade shall be known as No. 3, and shall comprise stock not up to grade of No. 2, admitting unsound knots, splits, etc., provided three-fourths of the piece will work merchantable.

PATENT OR DROP SIDING.

First grade shall be known as No. 1, and shall have one clear face and be otherwise sound.

Second grade shall be known as No. 2, and will admit of discolored sap, and in six-inch will admit of two standard knots; in eight-inch four standard knots, or their equivalent in small knots.

CEILING AND FLOORING.

First grade shall be known as No. 1, and shall have one clear face and be otherwise sound.

Second grade shall be known as No. 2, and may admit of one standard knot or three small knots and slight sap stains.

Third grade shall be known as No. 3, and shall be comprised of stock not up to grade of No. 2, provided three-fourths of the piece will work without waste.

Four, five and six-inch flooring and ceiling shall be worked three and one-fourth, four and one-fourth and five and one-fourth inch face.

PARTITION.

No. 1 must be clear of knots on both sides.

No. 2 graded same as No. 2 flooring.

CASING AND BASE.

Graded same as patent siding, and shall be inspected on face side, worked one-half inch less than size given.

MOULDINGS.

Shall be based on Universal Moulding Book.

Official Classification, Grading and Inspection Rules for the Measurement of Gum Lumber.

Adopted November 8th, 1902. Headings Rearranged, Nashville, Tenn, Jan. 24th and 25th, 1905.

GENERAL INSTRUCTIONS.

1. The inspection of lumber is largely a matter of judgment, and these rules are intended to define in a general way such inspection.
2. Exceptions to the general rule of grading will be found under the heading for each kind of lumber.

3. Lumber must be inspected and measured as the inspector finds it, of full length and width. He shall make no allowance for the purpose of raising the grade. In inspecting all lumber, both sides of the piece shall be taken into consideration in making the grade; bearing in mind that 90 per cent. of all lumber only shows one face when finished.

4. Lumber shall be well manufactured, of even thickness, and have parallel edges, and all ragged and bad ends shall be trimmed off.

5. Tapering lumber shall be measured at one-third the length of the board from the narrow end.

6. All lumber shall be tallied surface or face measure, the tally counted up, and the one-quarter or one-half added to the total where the lumber is one and one-quarter or one and one-half inches thick, and two inches and thicker to be multiplied by the thickness. In the measurement of all lumber, fractions exactly on the one-half foot are to be given alternately to the buyer and seller; the fractions below the one-half foot are to be dropped, and all fractions above the half foot are to be counted to the next higher figure on the board rule.

7. The standard lengths are four to sixteen feet. Standard thicknesses are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2.

8. Standard grades are Firsts and Seconds Red, Wagon Box Boards, Firsts and Seconds Sap, Red Common, No. 1 Common, No. 2 Common and No. 3 Common.

STANDARD DEFECTS.

Each out of the following items constitutes a standard defect:

- (a) One knot one and one-quarter inches in diameter.
- (b) Two knots not exceeding in extent one standard knot.
- (c) Worm holes, grub holes or rafting pin holes not exceeding in extent or damage one standard knot.
- (d) Heart, shakes, rot or dote not exceeding in extent or damage one standard knot.
- (e) Splits are not to exceed twelve inches in length in Firsts, or one-sixth the length of the piece in Seconds; in the aggregate not more than 20 per cent. of the whole in either quality may be so split.
- (f) Sap to one-fifth the width of the board in the aggregate.
- (g) One bark edge or wane not to exceed one inch in the aggregate, running not to exceed one-third the length of the board, and only showing on one side and to be measured.

Explanations of Standard Defects.

- (a) Ordinary season checks are not to be considered defects.
- (b) Black stain is not a defect if planing it once will remove it.
- (c) Sap shall be considered bright that will show bright after planing.
- (d) Splits that do not diverge more than one inch for each foot in length are straight splits.
- (e) A straight split not exceeding six inches in length in one end of a piece of lumber, eight inches and over wide, shall not be considered a defect.
- (f) Sound heart in Firsts and Seconds if longer than the width of the piece will reduce it to the next lower grade.
- (g) In grades below Firsts and Seconds, boards with one clear face eight inches and over wide shall be raised one grade.
- (h) The location of defects in a piece has much to do with its value, and should have great weight in deciding the grade.
- (i) Wide pieces of lumber that would take two or three standard knots may have one large knot, equal to two or three standard knots if there are no other defects.
- (j) The rules for the inspection of lumber are intended to define the poorest piece that will go in a given grade. Where the defects are slightly beyond the specifications, making it a line board, twelve-foot and longer lengths should be given advantage in grade; ten-foot and shorter lengths reduced.
- (k) All widths and lengths mentioned in these rules shall be inclusive.

GUM.

FIRSTS AND SECONDS RED.

Firsts and Seconds Red are combined as one grade. This grade shall show one red face.

Firsts shall be six inches and over wide; ten, twelve, fourteen and sixteen feet long, and free from all defects except in pieces eight inches and over wide, which shall admit of one standard defect.

Seconds are six inches and over wide, eight to sixteen feet long, six and seven inches wide will admit of one standard defect; pieces eight, nine and ten inches wide will admit of two standard defects; pieces eleven, twelve and thirteen inches wide will admit three standard defects; except ten-foot lengths which will admit two defects. As widths increase defects may increase in proportion. This grade will admit 15 per cent. of ten-foot and 5 per cent. of eight-foot lengths. Eight-foot lengths must grade first in quality.

WAGON BOX BOARDS.

Lengths, 12, 14 and 16 feet.

Widths, 8 to 12 inches, and 13 to 17 inches.

Thickness, one inch.

In Box Boards bright sap or slightly discolored sap that will dress up sound, not necessarily bright but not black, admitted.

One sound knot not to exceed one inch in diameter, showing on one side only, will be admitted in this grade.

Splits in 12-foot may be fifteen inches long, or any defect that will cut off leaving the board 10 feet 6 inches long. 14-foot is used for making one side 10 feet 6 inches, and one end 3 feet 6 inches, so a split is a serious defect in this length; but 10 per cent. of all 14-foot in a given lot may have one split not to exceed 12 inches in length, 16-foot may have one standard knot, showing through the piece, provided it will cut two pieces same as a 14-foot board.

FIRSTS AND SECONDS SAP.

Firsts and Seconds Sap shall grade the same as Firsts and Seconds Red, except that bright sap in any quantity is not to be considered a defect in this grade.

RED COMMON.

This grade shall show one red face.

The lengths are six to sixteen feet, not to exceed 10 per cent. of six foot lengths. The widths are four inches and over.

Four and five inches will admit one standard knot or equal defects.

Six to eleven inches wide, eight and ten feet long, must work two-thirds clear face in not over two pieces.

Twelve inches and over wide, eight and ten feet long, must work two-thirds clear face in not over three pieces.

Six to eleven inches wide, twelve feet and over long, must work two-thirds clear face in not over three pieces.

Twelve inches and over wide, twelve feet and over long, must work two-thirds clear face in not over four pieces.

No piece or cutting to be considered which is less than four inches wide and three feet long, but as the width increases the length may decrease, but the shortest cutting to be considered must be eighteen inches long and not less than eight inches wide. Two-thirds of this grade must be six inches and over wide. Pieces six feet long must be clear up to eight inches wide; over eight inches wide will admit one standard defect.

No. 1 COMMON.

Shall grade the same as Red Common, except that discolored sap is not to be considered a defect in this grade.

No. 2 COMMON.

The lengths are four to sixteen feet. The widths are three inches and over. Pieces four feet long must be clear.

Pieces six feet long and longer must cut 50 per cent. clear face.

No piece or cutting to contain less than one foot face measure.

Black sap is not to be considered a defect in this grade.

No. 3 COMMON.

The lengths are four to sixteen feet. The widths are three inches and over, and must contain at least 25 per cent. clear face cutting. No piece or cutting to contain less than one-half foot face measure.

Black sap is not to be considered a defect in this grade.

BY-LAWS.

Of the Lumbermen's Exchange of St. Louis.

ARTICLE I.

Meetings of Members.

Section 1. An annual regular meeting of the members of the Exchange shall be held on the second day of January of each year, at the rooms of the Exchange, to commence at the hour of 10 o'clock a. m., and in case such date is a legal holiday, on the day following at the same hour, for the election of President, Vice-President, seven Directors (they to form the Board of Directors), and five members of the Committee of Arbitration, and for the transaction of such other business that may come before such meeting. The term of office of the persons so elected shall commence on the third day of January.

Section 2. The President, Vice-President, Directors, and members of Committee of Arbitration of this Exchange now holding office shall continue to hold the same until the next annual regular meeting of members as above provided for, and until their successors are duly elected and qualified.

Section 3. Special meetings of members shall be called and held whenever the President or Board of Directors deem it necessary, or when five members make a request in writing to call a special meeting. Two days' written or printed notice of the holding of such special meeting shall be given to the members, by mailing the same to their business address.

Section 4. Nine members at any time shall constitute a quorum for the transaction of business at any annual, regular or special meeting of members.

ARTICLE II.

Directors.

Section 1. The Board of Directors shall manage and conduct all the financial and business concerns of the Exchange in accordance with the constitution, by-laws and rules thereof.

Section 2. The Board of Directors shall hold regular monthly meetings every second Friday in each month, at 1:30 p. m. When such meeting shall fall upon a legal holiday, said meeting shall be held on the day following at the same hour.

Section 3. Special meetings of the Board of Directors shall be held at the call of the President, or whenever three directors make a request in writing to call such special meeting; one day's printed or written notice of the holding of such special meeting shall be given to the directors, by mailing the same to their business address.

Section 4. The Directors shall annually, on the second Monday in January of each year, or at any regular meeting of their body, elect a Secretary and a Treasurer, and may, also, from time to time, appoint inspectors and measurers, and such other officers, agents and employees as in their opinion are necessary for the purposes of the Exchange; shall establish regulations for their government; shall fix their compensation and fees for the services to be rendered by them; may require from them an oath, and good and sufficient bond for the faithful performance of their respective duties, and trust, such bond to be payable to the President or his successor of this Exchange, for and to its use. The term of office of the Secretary, Treasurer, Inspector, and all other officers, agents and employees elected or appointed by the Board of Directors, shall be revocable at the will of said Board.

Section 5. It shall be the duty of the Board of Directors to recommend to the Mayor of the city of St. Louis the names of such lumber measurers and inspectors as they judge to be competent and qualified to measure and inspect lumber in accordance with the standard rules of this Exchange, and who shall be known as Exchange Inspectors and Measurers.

Section 6. The Board of Directors shall make a report to the Exchange of appointments made by them, or the revocation of the same; and shall at each annual meeting make a full report of their proceedings and the condition of affairs of the Exchange, the amount of annual dues to be collected from each member, for the purposes of the Exchange, for the ensuing year.

Section 7. Board of Directors may, in their discretion, provide such legal aid and advice as they may deem necessary to assist them or any one of the committees in the discharge of their duties.

ARTICLE III.

Officers.

Section 1. The President of the Exchange shall have the general supervision and management of its business affairs; shall preside at all meetings of the Board of Directors and of the members; shall approve all vouchers issued by the Secretary and Treasurer for the disbursements of all funds for and on account of the Exchange.

Section 2. It shall be the duty of the Vice-President to perform the duties of the President in the case of his absence, disability or resignation.

Section 3. In case that by reason of the death, resignation or removal from office of the Vice-President, or of any one of the Directors, or of any member of the Committee of Arbitration, a vacancy arises in their respective offices, the same may be filled by the Board of Directors at any regular or special meeting.

Section 4. The Secretary, under the direction of the Board of Directors, shall keep a fair and regular journal of the proceedings of the Exchange; take charge of the seal, books, papers and property belonging to the Exchange, and keep a correct account of all the business transacted by the Exchange, and collect, collate and record all valuable statistical information pertaining to or that may benefit this Exchange; and at the annual meeting in each year make to the Exchange a full report of the business of the Exchange for the preceding year, ending January 1st, with such other information as may be in his possession that may be of interest to the members. He shall, under the direction of the President, give notice of meetings, conduct the correspondence of the Exchange, and read such records and papers as he may direct; shall himself, or by substitute, attend meetings of Committee of Arbitration and of the Board of Directors, and keep an official record of their proceedings; give notice when their services are required; issue the necessary notices and papers to parties and witnesses, and render copies of verdicts to the parties in each case. He shall collect all moneys due the Exchange for dues, fines or otherwise, and pay the same over to the Treasurer; shall keep his office (which shall be at the Exchange rooms) open during business hours; shall see that the rooms and property of the Exchange are kept in good order, and perform such other duties as the Board of Directors may from time to time direct.

Section 5. The Treasurer shall receive and keep a correct account of all moneys belonging to the Exchange, and shall disburse the same on the order of the Secretary, countersigned by the President or such other officer as the Board of Directors shall designate; shall make a monthly report to the Board of Directors on the second Friday of each month, and a full report to the Exchange at its annual meeting, at the first meeting in January in each year.

ARTICLE IV.

Committee of Arbitration.

Section 1. The duty of the Committee of Arbitration shall be to investigate and decide all disputes and difficulties of a financial or commercial character which may be submitted to it. The statements of the principals and witnesses in each case shall be made under oath; and having been recorded, the committee shall proceed to decide the case.

Section 2. Three of the members of the Committee of Arbitration shall be a quorum for the transaction of business, and a majority decision of such quorum shall be binding.

Section 3. The Committee of Arbitration shall render its awards in writing to the parties in controversy through the Secretary of the Exchange, within one week after their decision shall have been made. Such awards shall be signed by the President or Vice-President and the Secretary, and have affixed thereto the seal of the Exchange. The official record of the decision of this committee may be inspected by any member of the Exchange upon application to the Secretary.

Section 4. When from absence or disqualification of regular members the Committee of Arbitration can not be formed, the contending parties shall be allowed to fill vacancies with any member or members of the Exchange willing to serve, on whom they may agree. Committees so formed shall be governed by the same rules, and their decisions shall have the same effect, as if decided upon by the regularly elected Committee of Arbitration.

Section 5. Parties desiring the services of the foregoing committee shall notify the Secretary to that effect in writing, and shall file a bond or make a deposit to cover the expense of arbitration with him, signed by the parties in the controversy. Both parties shall agree, in writing, to abide, perform and fulfill the final award that shall be made touching the matter submitted, without recourse to any other court or tribunal. Neither party shall postpone the trial of a case longer than ten days after it has been

submitted, unless good cause can be shown therefor, satisfactory to the committee. Trifling and unimportant matters shall not be entertained by the Committee of Arbitration.

Section 6. The fees for arbitration, under the sanction of this Exchange, shall be as follows: For each award under \$1,000, five dollars; for each award from \$1,000 upwards, ten dollars.

Section 7. The fees as above shall be paid to the Secretary, for the benefit of the Exchange; and, in addition, the Secretary shall be entitled to not less than three dollars for each case submitted, and the further sum of ten cents for every folio of writing performed in connection with any such case, the amount of such fees to be determined and allowed by the arbitrators as a part of the cost of any such case.

Section 8. If parties in a controversy fail to appear at the time set for trial, or request a postponement, they may (if the case is postponed) be fined, for the use of the committee, any sum at their option not exceeding one-half of the regular fees in the case. The committee, however, may insist that the trial shall take place.

Section 9. The above fees and all additional costs that may be incurred in the investigation of suits shall be paid by either of the parties in the case, as may be decided by the committee hearing the same, and shall be included in their award.

ARTICLE V.

Exchange Inspectors and Measurers.

Section 1. The Exchange Inspectors and Measurers shall obtain written authority, signed by the President and Secretary of this Exchange, authorizing them to inspect and measure all and any lumber dealt in by members of this Exchange, when requested by the member or members owning or interested in such lumber, which authority shall be good until revoked by the Board of Directors.

Section 2. The said Exchange Inspectors and Measurers are to bind themselves to fairly inspect and measure all lumber which they are called upon by members of the Exchange to inspect and measure in accordance with the standard rules of this Exchange, and obey all rules the Board of Directors may deem proper for the further performance of their duties.

Section 3. The Board of Directors shall furnish all persons whom they have recommended as Inspectors and Measurers the Exchange certificate blanks, upon which the seal of this Exchange shall be affixed by the Secretary, and the said certificate blanks are to be used only as herein provided for.

Section 4. Said certificates of inspection and measurement shall have the official seal of the Exchange upon them, and such certificates, and none other, shall be held as binding between members of this Exchange, providing no demand is made to have a remeasuring and reinspection, which may be had as herein otherwise provided for.

Section 5. Exchange certificates of measure or inspection, bearing the seal of this Exchange, shall not be used for any purpose other than covering the property sold or purchased by members of this Exchange or others; and any unauthorized use of such certificates by the Exchange Inspectors will work a forfeiture of his authority as an Exchange Inspector. Rules of this Exchange shall only apply to lumber received in this market from points outside of the city. Sales from yards or by dealers can be optional with seller or buyer, or both.

ARTICLE VI.

Membership.

Section 1. The persons, firms or corporations qualified to become members of this Exchange under its Charter and Constitution, and desirous to become members, shall make written application therefor to the Board of Directors, and shall be admitted or rejected as members by the Board of Directors at a regular meeting, or at a special meeting called for that purpose.

Section 2. All members of this Exchange herewith agree, and all new members of this Exchange shall in writing agree, to abide by and subject themselves to the charter, by-laws, rules and regulations of this Exchange.

Section 3. Members may withdraw membership in this Exchange by notifying the President in writing of their intention to do so, thirty days before such withdrawal takes effect. But the members so withdrawing shall be liable for all dues then payable.

Section 4. Members of the Exchange may introduce non-residents to the Exchange rooms.

Section 5. The annual dues of members shall be as follows:

Hardwood members, ten dollars per year, payable in advance.

Pine members, five dollars per year, payable in advance. All firms, persons or corporations engaged in the white or yellow pine business. These firms are to be known as associate members; are to be allowed full privileges of the Exchange rooms, but are not eligible to hold office or allowed to vote.

ARTICLE VII.

Seal.

The seal of this Exchange shall bear the figures of the Lumbermen's Rule, and the words, "The Lumbermen's Exchange of St. Louis," in manner hereon impressed.

Rules Governing the Inspection and Measurement of Lumber in the St. Louis Market.

RULES GOVERNING INSPECTORS.

Rule 1. The Chief Inspector and Deputy Inspectors shall be appointed by the Board of Directors of the Lumbermen's Exchange, at such times as the Board may deem proper. Appointments shall be made upon written applications, stating that the applicant agrees to be governed by the rules, qualifications and standards now existing, or which may hereafter be adopted for the government of the Chief and Deputy Inspectors, or the measurement and inspection of lumber, bought or sold on St. Louis inspection; and to make good to any party aggrieved any loss or damage on account of negligent or wrongful inspection or measurement of lumber which may be awarded upon proper appeal; the said appointment to be made only after examination showing fitness by a committee appointed by the President or Board of Directors. The Board of Directors shall have authority to discharge either the Chief Inspector or any Deputy Inspector at their discretion.

Rule 2. Each Deputy Inspector shall deposit, and at all times keep on deposit with the Treasurer of the Lumbermen's Exchange, the sum of \$25.00, out of which the Treasurer may reimburse to the parties aggrieved any loss or damage on account of negligent and wrongful inspection or measurement of any lumber which may have been awarded, upon proper appeal against said Deputy Inspector.

Rule 3. The Chief Inspector and the Deputy Inspectors shall pay out of their fees to the Lumbermen's Exchange 7 cents per thousand feet for all lumber inspected and measured by them; said fees to be used for the Exchange as may be ordered by the Board of Directors.

Rule 4. The acting Secretary shall assign the Inspectors to their several places of duty in rotation, as orders for inspection shall be received by him, and shall not depart from this rule except in cases where the buyer and seller agree on some Inspector, and then such requests shall be communicated to the office of the Exchange by each party interested by telephone or verbally and confirmed by written notice.

Rule 5. The grading and inspection of lumber shall be strictly in accordance with the rules and orders adopted by the Lumbermen's Exchange of St. Louis, and the fees to be charged for inspection shall be regulated by the Board of Directors of the Lumbermen's Exchange of St. Louis.

Rule 6. All orders for the measurement and inspection of lumber shall be given to the Chief Inspector, or to the Secretary or Assistant Secretary of the Lumbermen's Exchange, and he shall assign the Deputies to perform the same as provided in Rule 4.

Rule 7. The Inspectors, after having measured or inspected any lot of lumber, shall immediately make out original, duplicate and triplicate certificates of inspection, which shall be countersigned by the Acting Secretary, and which shall bear the seal of the Lumbermen's Exchange of St. Louis, and the Acting Secretary shall deliver the original and duplicate certificates to the party paying for the inspection, and retain the triplicate certificate on file as property of the Exchange. Such certificates shall state, in addition to other requirements, the name of the place where such inspection is made. All certificates issued by this Exchange shall be stamped with the date and hour of their delivery to the seller.

Rule 8. An appeal may be taken from the decision of any Inspector, by either buyer or seller. Buyer must file notice of appeal within 48 hours of receipt of certificate by him. In no case shall an appeal be entertained after 120 hours from date and hour stamped for delivery to seller, nor shall it be entertained if lumber has been removed from place where it was inspected, nor until the appellant has deposited with the Acting Secretary the amount provided by the rules to defray expense of such reinspection as provided in Rule No. 14. The appellant shall notify the other party to the transaction at the same time the appeal for reinspection is given.

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Rule 9. If from any cause the seller should hold a certificate beyond 72 hours, the buyer may call for a new and original inspection by another inspector, which will render void any previous certificate that may exist, which certificate must be returned to the Exchange and cancelled.

Rule 10. When an appeal is taken from the inspection of any Inspector, the President of the Exchange shall appoint one of the Inspectors, and also two arbitrators, one yard man and one commission man or broker to reinspect same. The Inspector shall inspect said lumber, and call the grade and measurement of each piece. One of the arbitrators shall tally each piece, and his tally shall be the official tally. In case of dispute as to the grade of any piece during inspection, the decision of any two who agree shall be final. Neither buyer nor seller, nor other parties, are allowed to call attention to defects of grade of lumber. Parties inspecting same are to be unhampered by any outside influence whatever.

Rule 11. Should a reinspection sustain the original inspection, then the appellant shall pay for reinspection. Should the reinspection materially change the first inspection, then the fee paid for the first inspection, together with the cost of arbitrators, shall be paid back to the appellant by the Inspector in error. It shall be deemed a substantial change when the reinspection shows a difference of 4 per cent. or more, in which case the Acting Secretary shall issue new certificates.

Rule 12. The Secretary shall keep a record in which shall be recorded all appeals from the inspection of the Inspectors. Said record shall show the name of the Inspector from whose inspection the appeal is taken, the name of the appellant, and the inspection by both the Deputy and Chief Inspectors, and shall make a report of same to the Board of Directors at their regular monthly meeting.

Rule 13. In arriving at the value of any lot of lumber, the Secretary shall use the price furnished him by the buyer and seller; or, on refusal by either of them to furnish prices, he shall take the prevailing market quotations as a basis.

Rule 14. The fees for reinspection shall be 90 cents per thousand feet for all classes of lumber. Out of the fees collected for the reinspection of lumber, the Exchange shall pay the handler 20 cents per thousand feet, and the Inspector shall receive 20 cents per thousand feet. Each of the arbitrators shall receive 25 cents per thousand feet for their services.

Rule 15. The Deputy Inspectors, when inspecting mixed lots of red and white oak lumber, shall keep the grades of each kind separate in his book, and shall render a certificate showing the quantity of each grade of both varieties.

Rule 16. Inspectors shall not be permitted to issue certificates of inspection showing any grade of lumber not adopted and in force by this Exchange.

Rule 17. Each Deputy Inspector shall keep a book in which he shall keep a tally of each separate piece of lumber except when lumber is measured straight or merchantable, which shall show the number of pieces of the different thicknesses in each grade of lumber so measured; said tally to be delivered to the Secretary, who shall verify the extensions and additions before the certificates shall be countersigned.

Rule 18. The Deputy Inspector, when inspecting large lots of lumber on the levee, shall separate such lumber into lots of 15 to 20 thousand feet, and shall mark each lot so separated, showing the quantity of lumber in it, and for whom it has been inspected or measured.

Rule 19. The Deputy Inspectors, with their handlers, shall remain on duty every business day until 2 o'clock p. m.—and the Acting Secretary is required to report to the President or Board of Directors any deviation from this rule.

Rule 20. Non-member of the Exchange who order lumber inspected, shall be required to deposit with the Secretary a sufficient sum of money to pay for the inspection of said lumber.

Rule 21. The Lumbermen's Exchange of St. Louis, in establishing the regulations for the inspection of lumber, and in appointing the Inspectors thereof, assumes no responsibility or liability for errors in judgment or otherwise on the part of Inspectors.

General Rules and Instructions to Inspectors.

As the inspection of lumber is so largely a matter of judgment, Inspectors inspecting under these rules are instructed to use their best judgment based upon these rules, taking into consideration the general run of the stock as to lengths, widths and manufacture.

Lumber must be measured and inspected as the Inspector finds it, of full length and width. He shall make no allowance for the purpose of raising the grade. The inspection shall be made from the worst side of the board, except as otherwise provided by the rules.

Lumber should be well manufactured, of good lengths and widths. It should be sawed plump and even thickness, and have paralleled edges and square ends. Tapering lumber in standard lengths is measured at the narrow end.

All lumber shall be tallied face or surface measure.

Rule 1. Standard grades of lumber shall be firsts, seconds, common and cull. In the grades of firsts and seconds the purchaser is entitled to a fair proportion of clear lumber, which must not be less than 33⅓ per cent. First and clear are interchangeable terms.

Rule 2. The standard lengths are 6, 8, 10, 12, 14, 16, 18 and 20 feet, except as otherwise specified. Most of the lumber is handled in lengths of 10, 12, 14 and 16 feet. Odd lengths, such as 9, 11 and 13 feet, shall be measured back to the next even length, except when otherwise specified. In the grade of firsts and seconds the lengths are from 10 to 16 feet; but there must not be over 10 per cent. of 10-foot lengths, unless otherwise stated.

Rule 3. Standard thicknesses shall be 1, 1¼, 1½, 2, 2½, 3, 3½ and 4 inches, except Poplar, which will allow ½, ⅝ and ¾ inches in car lots.

Rule 4. Standard knots shall not exceed 1¼ inches in diameter, and must be of sound character.

Rule 5. Lumber must be sawed into plump and even thicknesses. Scant sawed lumber must be reduced to the next standard thickness, and in case of 1-inch lumber, to one grade lower. All badly sawn, miscut and uneven lumber shall be classed as cull, except when same will dress in its full length and width in the next standard thickness, in which case the piece shall not be reduced in grade.

Rule 6. A split not exceeding in length in inches the surface measure of the piece in feet shall be allowed in the grade of firsts and seconds as equal to one standard knot.

Rule 7. A cull which will not work one-half its size without waste is a mill cull of no recognized value, in cuttings not less than two feet long by three inches wide, clear.

Rule 8. Ordinary season checks are not considered defects. Black stain, badly warped, heart shakes, rots, worm holes and dotted parts are considered serious defects, reducing to grades lower than firsts and seconds.

Rule 9. Lumber sawed for specific purposes, such as axles, bolsters, tongues, reaches, newells, balusters, squares, etc., must be inspected with a view of the adaptability of the piece for the intended use, as in many cases it can not be used for other purposes. Inspection shall be good and cull.

Rule 10. When lumber is ordered measured straight measure, all mill culls found in such lumber measured shall appear on the face of the certificate as mill culls.

Rule 11. Log run is the entire cut of the log, mill culls out.

Inspection Fees.

Section 1. That to compete and conform with other first-class markets, it is hereby agreed that the Inspectors' and Measurers' fees shall be as follows, viz.:

	Graded.	Straight.	Merchantable
Plain and Quartered Oak, Ash.....	40c	30c	40c
Cypress, Walnut, Cherry.....	40c	30c	40c
Quartered Sycamore, Hickory	40c	30c	30c
Pecan, Hackberry, Cedar, Birch.....	40c	30c	40c
Butternut, Locust, Mahogany	40c	30c	40c
Poplar, Gum, Elm	30c	30c	30c
Yellow Pine, Plain Sycamore.....	30c	30c	30c
Maple, Chestnut, Basswood	30c	30c	30c
Cottonwood	30c	25c	25c

If tally sheet is furnished, an extra 10 cents per thousand feet shall be charged on the above prices.

Section 2. When the buyer or seller requests the separation of the grades, such separation shall be made by the Inspector at the expense of the parties so requesting, such cost not to exceed 10 cents per thousand feet.

Rule 12. Merchantable means lumber measured for what it will work.

Rule 13. The inspection grades of wagon stock, newels, balusters and table legs shall be good and cull.

Rule 14. Newels from all kinds of timber must be clear and free from heart, to square 5, 6, 7, 8, 9 and 10 inches plump. The lengths must be 4 feet full, or multiples thereof.

Rule 15. Balusters and table legs shall be clear and square 2x2, 2½x2½, 3x3 and 4x4, 30 and 32 inches long.

Rule 16. Balusters should be 4 feet, and 4 feet 6 inches in length, and the size should be 3x4, 3¼x4¼, 3½x4½, 4x5, 4½x5½ and 5x6.

Rule 17. Reaches should be 2x4, or 2¼x4½, 8, 9, 10, 12, 14 and 16 feet long.

Rule 18. Hickory axles shall be 6 feet for 3x4, 3¼x4¼, 3½x4½, and 4x5 inches, and 6½ feet long, for 5x6 and 5x7.

Rule 19. Wagon tongues must be straight and 2x4 at the small end, and 3x4, 3½x4 or 4x4 at butt end, 12 feet long.

Poplar.

The inspection grades shall consist of firsts and seconds, sap clear, common and cull. Standard lengths shall be 10, 12, 14 and 16 feet. Not more than one-tenth of all firsts and seconds in any lot shall be allowed of 10-foot lengths. Firsts and seconds shall be 8 inches and over wide; at 8 inches will admit 1 inch of bright sap, but no other defects; at 10 to 12 inches will admit 3 inches of bright sap, or 2 standard knots; at 12 to 15 inches will admit 4 inches of bright sap and 2 standard knots, or 3 standard knots if there is no sap.

Sap Clears are 6 inches and over wide, 10 to 16 feet long, free of all defects except bright sap.

Boards and planks free from other defects may be one-half bright sap, if over 12 inches wide.

Common shall include any width not less than 6 inches, and will allow bright or discolored sap and knots beyond those described in firsts and seconds. Two unsound knots of standard size will be allowed in this grade if over 12 inches wide, and splits must not be considered a defect; otherwise the lumber must be sound, available $\frac{3}{4}$ its size without waste. Heart shakes extending more than $\frac{1}{4}$ the length of the piece not admitted.

Culls shall comprise all widths and sizes having more defects than Common, whether in the number or character of the knots, badly checked, and generally such lumber as is unfit for ordinary purposes.

Box boards shall be 12, 14 and 16 feet long, from 13 to 17 inches wide, free from all defects except bright sap.

Poplar Strips shall be full 6 inches wide, 1, $1\frac{1}{4}$ and $1\frac{1}{2}$ inches thick, 12, 14 and 16 feet long. Clear shall be free from all defects. Seconds, clear, may be $\frac{1}{2}$ bright sap on one side and have one sound knot not over $\frac{3}{4}$ of an inch in diameter. Common shall embrace all sound strips with more defects than seconds clear. Cull shall contain all unsound strips that will work one-half their contents, and all tapering strips, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$ and $\frac{3}{4}$ inch first and second shall be 10 inches and over wide.

Poplar Squares shall be graded as No. 1, No. 2 and culls. No. 1 lengths may be 8, 9, 10, 12, 14, 16 and 18 feet. 4x4 will admit of $\frac{1}{2}$ inch bright sap, or 2 standard knots; 5x5, 6x6 and 7x7 will admit $\frac{1}{8}$ bright sap, or 2 standard knots; 8x8, 10x10 and 12x12 will admit $\frac{1}{2}$ bright sap and 3 standard knots. Hearts will not be admitted in the grade as No. 1.

No. 2 will admit discolored sap and knots of a sound character, wane, ordinary season checks and splits not to exceed 12" lengths.

Cull shall comprise all squares below the grade of No. 2.

Plain Sycamore, Maple, Ash and Elm Hackberry.

Grades shall consist of firsts and seconds, common and cull. Lengths, 10, 12, 14 and 16 feet. Not more than 1-10 of all firsts and seconds in any lot shall be allowed of 10-foot lengths. Bright sap is no defect. Firsts and seconds Ash shall be 6 inches wide and over. At 8 inches one, and at 10 inches 2 standard knots, or their equivalent in other defects, which are allowed in this grade. An allowance for more defects of this character may be made in proportion to increased widths. Eighteen feet or longer must be 5 inches or over wide. This is a special length, and can be admitted in the grade of firsts and seconds.

Common shall include 4 inches and over wide. At 6 inches one, and at 8 inches 2 standard knots or their equivalent in other defects may be allowed. An allowance for more defects of this character may be made in proportion to increased widths. Common shall work 75 per cent. clear in cutting, not less than 4 inches wide and 3 feet long, in 3 pieces.

Cull shall comprise all widths and sizes below the description of common. Must be available $\frac{1}{2}$ its size without waste, in cutting 3 inches wide and 2 feet long.

Plain Sawed Red and White Oak and Locust.

Grades shall consist of firsts and seconds, common and cull. Lengths, 10, 12, 14 and 16 feet. Not more than 1-10 of all firsts and seconds lumber may be 10-foot lengths. Firsts and seconds shall be 6 inches wide and over. At 8 inches one, and at 10 inches 2 standard knots, or their equivalent in other defects, which are allowed in this grade. An allowance for more defects of this character may be made in proportion to increased width.

Common shall include 4 inches and over wide. At 6 inches one, and at 8 inches 2 standard knots, or their equivalent in other defects, may be allowed. An allowance for more defects of this character may be made in proportion to increased width. Common should work 75 per cent. clear in cuttings, not less than 4 inches wide and 3 feet long, in 3 pieces.

Dimension may contain sound hearts, if well boxed. Heart shakes, rot and dote not admissible.

Cull shall comprise all widths and sizes below the description of common. Must be available $\frac{1}{2}$ the piece in cuttings not less than 3 inches wide and 2 feet long.

Quarter-Sawed Oak.

Grades shall consist of firsts and seconds, common and cull. Standard lengths shall be 10, 12, 14 and 16-foot lengths, in firsts and seconds. Not more than 1-10 of firsts and seconds lumber may be 10-foot lengths.

First and seconds must be 6 inches wide and over. At 7 inches one, and at 9 inches or wider 2 standard knots will be allowed, or their equivalent in other defects which are allowed in this grade.

Common shall be 3 inches wide and over. At 6 inches one, and at 8 inches two standard knots, or their equivalent in other defects, may be allowed. An allowance for more defects of this character may be made in proportion to increased widths.

Culls shall comprise all lumber below the description of common.

Note.—Stain and streaks in Quarter Sawed Oak are serious defects, and Inspectors are cautioned to be careful in estimating their damage in the piece, as oftentimes they will reduce it below the grade of first and seconds. All Quarter Sawed Oak must be cut at an angle of at least 45 degrees, and must be quartered the entire width of the piece.

Plain and Quartered-Oak Strips.

Oak Strips shall be 3, 4 and 5 inches wide, and the inspection grades shall be good and cull.

Good shall have one face clear of all defects. Cull shall include all badly warped and crooked pieces, and all lumber not up to the grade of first and seconds.

Hickory and Pecan.

Grades shall consist of first and seconds, common and cull. Lengths, 8, 10, 12, 14 and 16 feet. Not to exceed 20 per cent. under 12-foot lengths in first and second grades; sap is no defect.

First and seconds shall be 4 inches wide and over. At 6 inches wide 1 standard knot, or split not to exceed in length in inches the number of surface feet in piece. At 8 inches 2 standard knots, or their equivalent in other defects, which are allowed in this grade. An allowance of more defects of this character may be made in proportion to increased width.

Common shall be 4 inches wide and up, and must work $\frac{2}{3}$ clear in not more than 3 pieces; no cutting less than 3 inches wide and 3 feet long.

Culls must work $\frac{1}{2}$ clear in pieces not less than 3 inches wide and 2 feet long.

Mahogany.

Grades, firsts, seconds, common, culls and shorts. Lengths, 2 feet and over; widths, 3 inches and over; thickness $\frac{1}{2}$ inch and over. Odd lengths are measured in Mahogany.

Firsts are 7 inches and over wide, 10 feet and over long, and free from all defects except in pieces 10 inches and over wide, which may have one standard defect.

Seconds are 6 inches and over wide, 8 feet and over long, not to exceed 10 per cent. under 12 feet. Pieces 6 inches wide are clear; pieces 7 to 9 inches wide may have 1 standard defect; pieces 10 to 12 inches wide may have 2 standard defects; pieces 13 inches and over wide may have 3 standard defects. The combined grades of firsts and seconds must contain 75 per cent. of firsts.

Commons are 4 inches and over wide, 8 feet and over long, not to exceed 30 per cent. under 12-foot. Four and 5-inch pieces are clear. Pieces 6 inches and over wide must work 75 per cent. clear. No piece of cutting considered in the common grade which is less than 3 inches wide by 3 feet long.

Shorts are 4 inches and over wide, 2 to 7 feet long, and must be firsts and seconds in quality.

Counters are 12 to 40 feet long, 18 to 24 inches wide, and must be free from all defects. Splits to be measured out.

Gum.

Grades shall be firsts and seconds, common and cull. Length in firsts and seconds shall be 12, 14 and 16 feet.

Firsts and seconds must be 6 inches and over wide. At 8 inches may have 1 standard knot, and at 10 inches 2 standard knots. Ten to 12 inches may have 3 standard knots. An allowance may be made for more defects of this character in proportion to increased width; sap not admitted in this grade.

Common shall be 5 inches and over wide, and shall include all lumber available for use $\frac{3}{4}$ its size without waste, free from hearts and unsound lumber. Bright or slightly discolored sap may be included in this grade.

Culls shall be 4 inches and over wide, and be available full $\frac{1}{2}$ its size in cuttings not less than 3 inches wide and 2 feet long.

Cottonwood.

Grades shall be box boards, firsts and seconds, common and cull. Lengths in firsts and seconds shall be 10, 12, 14 and 16 feet. Bright sap is no defect.

Box Boards shall be 12, 14 and 16 feet long, from 13 to 17 inches wide, free from all defects, except bright sap.

Firsts and seconds shall be 8 inches and over wide. At 8 inches 1 standard knot, and at 10 inches 2 standard knots, or their equivalent in other defects, may be allowed; 13 inches and over may have 3 standard knots or their equivalent in other defects.

Common shall be 8 to 16 feet long, 4 inches and over wide; 4 and 5 inches must be clear; 6 inches and over must be available fully $\frac{3}{4}$ clear, without waste.

Culls shall be 6 to 16 feet long, 3 inches and over wide, available fully $\frac{1}{2}$ in cuttings not less than 3 inches wide and 2 feet long.

Note.—The grade of Box Boards is a special grade and will be made only upon request.

Basswood.

Grades shall be firsts and seconds, common and cull. Lengths in firsts and seconds shall be 10, 12, 14 and 16 feet. Bright sap is no defect.

Firsts and seconds shall be 6 inches wide and up. At 8 inches 1 standard knot and at 10 inches 2 standard knots, or their equivalent, may be allowed. An allowance for more defects of this character may be made in proportion to increased width.

Common shall be 8 to 16 feet long, 4 inches and over wide. At 5 inches 1 standard knot, or its equivalent, may be allowed. Six inches or over wide must be available fully $\frac{3}{4}$ its size without waste.

Culls shall be 6 to 18 feet long, 3 inches and over wide; must be available $\frac{1}{2}$ in cuttings not less than 3 inches wide and 2 feet long.

Quarter-Sawed Sycamore.

Grades shall be firsts and seconds, common and cull. Lengths, 10, 12, 14 and 16 feet. One-tenth of all firsts and seconds may be 10-foot lengths. Firsts and seconds must be 6 inches and over wide. At 7 inches 1 standard knot or 1 inch bright sap; at 9 inches 2 standard knots or 2 inches bright sap; at 11 inches and over 3 standard knots, or 3 inches bright sap may be allowed.

Common shall be 3 inches and over wide. At 6 inches 1, and at 8 inches 2 standard knots may be allowed. More defects of this character may be allowed in proportion to increased width.

Common must work $\frac{3}{4}$ clear in cuttings not less than 4 inches wide by 3 feet long. Sap is no defect.

Culls must work $\frac{1}{2}$ in cuttings not less than 3 inches wide and 2 feet long.

Birch.

Grades shall be firsts and seconds, common and cull. Standard lengths in firsts and seconds shall be 10, 12, 14 and 16 feet. Not more than 1-10 of all the firsts and seconds in any lot shall be allowed of 10-foot lengths.

Firsts and seconds must be 6 inches wide and over. At 8 inches 1, and at 10 inches 2 standard knots, or their equivalent in other defects, which are allowed in this grade. An allowance for other defects of this character may be made in proportion to increased widths. Seventy-five per cent of the face must be red.

Common shall be sound, 5 inches and over in width, and may have defects not injuring it for ordinary use without waste. At 6 inches 1, and at 8 inches 2 standard knots, or their equivalent in other defects, may be allowed. An allowance for more defects of this character may be made in proportion to increased width. Sap is no defect.

Cull shall comprise all widths and sizes below the description of common.

BLACK WALNUT—CHERRY—BUTTERNUT.

Grades shall be firsts and seconds, common and cull. Lengths shall be 10, 12, 14 and 16 feet.

Firsts and seconds must be 6 inches and over wide. At 8 inches 1 inch of sap or 1 standard knot, and at 10 inches 2 inches of sap or 2 standard knots may be allowed. An allowance for more defects of this character may be made in proportion to increased width.

Common shall be 5 inches and over wide, and shall include all lumber not up to the grades of firsts and seconds, but available fully $\frac{3}{4}$ of its size without waste, free from hearts and unsound lumber; not more than $\frac{1}{2}$ of the surface of the one side shall be sap, both sides being considered. Heart shakes, rot, dote or worm holes are not admissible.

Cull shall comprise all lumber below the description of common, and must be available fully $\frac{1}{2}$ its size without waste. Gum spots are a serious defect, and are not admitted in the grade of firsts and seconds when damage exceeds $\frac{1}{6}$ of piece; $\frac{1}{3}$ damage reduces to a cull.

CHESTNUT.

Grades are firsts and seconds, common and cull. Lengths in firsts and seconds are 10, 12, 14 and 16 feet. Not more than 1-10 of all firsts and seconds may be 10-foot lengths; firsts and seconds must be 6 inches and over wide. At 8 inches 1, and at 10 inches 2 standard knots, or their equivalent are allowed in this grade. Twelve inches and over may have 3 standard knots, or their equivalent in other defects, which are allowed in this grade.

Common shall be from 8 to 16 feet long, 5 inches and over wide. No piece admitted which is not available fully $\frac{3}{4}$ of its size without waste.

Cull shall be all sound lumber below the description of common. Worm holes are no defect in this grade.

RED CEDAR.

Inspection grades shall consist of No. 1, common and cull, both in regard to boards and dimension stuff. Sound knots in Cedar not considered a defect.

No. 1 must be full 6 inches wide and up, 8 to 16 feet long. Will admit $\frac{1}{2}$ inch of sap on each edge of one face; one face must be red, free from all splits and checks, any thickness from 1 to 2 inches, evenly sawed.

Common will admit boards 4 inches wide and up, 6 to 16 feet. Splits not exceeding 12 inches, clear of wane edges.

Culls will include boards not good enough for preceding grades, but in which $\frac{1}{3}$ of the piece will work without waste.

Dimension Stuff—No. 1 will include all sizes from 2x4 up, not less than 6 feet in length, and will admit of $\frac{1}{2}$ inch sap on each face in sizes 6 inches square and over. A $\frac{1}{2}$ inch hollow in one end shall not be considered any defect, otherwise must be sound and perfect.

Common will in nowise differ from No. 1, except that sap will be considered no defect, and will admit of small hollow in each end, without regard to size; otherwise sound and perfect.

All pieces that do not come up to above grades will be considered culls.

CYPRESS.

Grades are Tank Stock, firsts and seconds, selects, shop and common.

Lengths are 8 to 16 feet.

Widths are 6 inches and over.

Thicknesses are 1 to 4 inches.

Tank stock shall be 5 inches and over in width, $1\frac{1}{4}$ to 4 inches thick and 8 feet and over long. Pieces up to 7 inches shall be free of sap. Pieces wider than 7 inches may have 1 inch of sound sap on one edge not to exceed half the length and half the thickness of the piece. In all widths, sound knots that do not impair its usefulness for tank purposes may be admitted.

Firsts and seconds shall be 8 inches and over in width. Pieces 8 to 10 inches may have 1 inch of bright sap on each edge, or its equivalent on one edge; otherwise they must be clear. Pieces 10 inches and under 12 inches wide may have $1\frac{1}{2}$ inches of bright sap on each edge, or three inches on one edge, and one sound standard knot $1\frac{1}{4}$ inches in diameter.

Pieces 12 inches wide may have one sound standard knot and 2 inches of bright sap on each edge, or the equivalent on one edge; or in lieu of sap may have two sound standard knots or their equivalent. Pieces wider than 12 inches may admit of defects in proportion as width increases. Pieces 14 inches and wider may have one straight split not over 10 to 12 inches long, when comparatively free from other defects. Slight season checks allowed in above grades.

Selects shall have one face side and be 7 inches and over in width. Pieces 10 inches and under in width shall admit two sound standard knots of $1\frac{1}{4}$ inches in diameter, and an additional sound standard knot for every two inches in width over 10 inches. Bright sap not considered a defect. Unsound knots that do not go through the piece to be allowed. Pieces free from other defects 10 inches and over wide, to admit pin worm holes on one edge one-tenth the width of the piece. Season checks no defect. Slight wane on 10-inch pieces and over allowed on one side, not over 3 feet in length. When

no other defects appear, slight amount stained sap may be allowed. Pieces 10 inches and over in width may have a straight split not to exceed 12 inches in one end, when comparatively free from other defects.

Note.—In the grade of select, large season checks which damage the piece for finishing purposes must be excluded. Unsound knots shall not exceed $1\frac{1}{4}$ inches in diameter. Stained sap must run lengthwise of the piece and can be $1\frac{1}{2}$ inches on each edge, or 3 inches on one edge, of a 12-inch piece, and less or more according to width.

Shop shall be 6 inches and over in width, 8 feet and over in length, and to include all lumber that will not go into above grades, but that will cut for shop use 60 per cent. clear of waste.

Merchantable or Common may be any width, admitting sap, knots, shake or peck, when the strength is not impaired.

Note.—Tank stock is a special grade and will be made upon request only.

YELLOW PINE.

The following are the rules of the Southern Lumber Manufacturers' Association as revised at Memphis, Tenn., January 17-18, 1900:

General Instructions.

1. Yellow Pine lumber shall be graded and classified according to the following rules and specifications as to quality, and dressed stock shall conform to the subjoined table of standard sizes—**except where otherwise expressly stipulated between buyer and seller.**

2. Recognized defects in Yellow Pine are knots, knot-holes, splits (either from seasoning, ring heart or rough handling), shake, wane, red heart, rot, rotten streaks, worm holes, pitch streaks, pitch pockets, solid pitch, torn grain, loosened grain, seasoning or kiln checks, and black or blue sap stains.

Knots.

3. Knots shall be classified as pin, standard and larger, as to size, and round and spike as to form; and as sound, loose, encased, pith and rotten as to quality.

4. A pin knot is sound and not over $\frac{1}{2}$ inch in diameter.

5. A standard knot is sound and over $1\frac{1}{2}$ inches in diameter.

6. A larger knot is sound and any size over $1\frac{1}{2}$ inches in diameter.

7. A round knot is oval or circular in form, and the mean or average diameter of the same shall be considered in applying and construing the rules.

8. A spike knot is one sawn in a lengthwise direction.

9. A sound knot is one solid across its face, is as hard as the wood it is in, and so fixed by growth or position that it will retain its place in the piece.

10. A loose knot is one not held firmly in place by growth or position.

11. A pith knot is a small, sound knot with a pith hole not more than $\frac{1}{4}$ inch in diameter in the center.

12. An encased knot is one surrounded wholly or in part by bark or pitch.

13. A rotten knot is one not as hard as the wood it is in.

Pitch.

14. Pitch pockets are openings between the grain of the wood containing more or less pitch or bark, and shall be classified as large or small pitch pockets.

15. A large pitch pocket is one $\frac{1}{8}$ of an inch and over in open width. A small pitch pocket is one less than $\frac{1}{8}$ of an inch in open width.

16. A pitch pocket showing open on both sides of the piece $\frac{1}{8}$ of an inch or more in width shall be considered the same as a knot hole.

17. A pitch streak is a well-defined accumulation of pitch at one point in the piece, and, when not sufficient to develop a well-defined streak, it shall not be considered a defect.

18. A small pitch streak shall be equivalent to not over 1-20 the width and $\frac{1}{6}$ the length of the piece it is in. A standard pitch streak shall be equivalent to not over $\frac{1}{6}$ the width and $\frac{1}{3}$ the length of the piece it is in.

Sap.

19. Bright sap shall not be considered a defect in any of the grades provided for and described in these rules. The restriction or exclusion of bright sap constitutes a special class of material which can only be secured by **special contract.**

20. Blued sap shall not be considered a defect in any of the grades of common lumber.

Miscellaneous.

21. Firm red heart shall not be considered a defect in any of the grades of common lumber.

22. Defects in rough stock caused by improper manufacture and drying will reduce the grade, unless they can be removed in dressing such stock to standard sizes.

23. All stock shall be inspected on the face side to determine the grade. And for stock surfaced one side the dressed surface shall be considered the face side. And for stock rough or dressed two sides, the best side shall be considered the face, but the reverse side of all such stock should not be more than one grade lower.

24. Imperfect manufacture in dressed stock, such as torn grain, loosened grain, broken knots, mismatching, insufficient tongue or groove on Flooring, Ceiling, Drop Siding, etc., shall be considered defects, and will reduce grade according as they are slight or serious in their effects on the use of the stock.

25. Pieces of either Flooring, Ceiling or Drop Siding having less than 3-16-inch of tongue shall not be admitted in any grade above No. 2 Common. Pieces with 3-16 inch or more of tongue to be admitted in any grade.

26. In all grades of Flooring, Ceiling, Drop Siding, etc., wane on the reverse side, not exceeding $\frac{1}{3}$ the width and $\frac{1}{6}$ the length of any piece, provided the wane does not extend into the tongue is admissible.

27. Chipped grain consists in a part of the surface being chipped or broken out in small particles below the line of the cut, and as usually found should not be classed as torn grain, and shall not be considered a defect.

28. Torn grain consists in a part of the wood being torn out in dressing. It occurs around knots and curly places.

29. Loosened grain consists in a point of one grain being torn loose from the next grain. It occurs on the heart side of the piece, and is a serious defect, especially in Flooring.

30. The grade of all regular stock shall be determined by the number, character and position of the defects visible in any piece. The enumerated defects admissible in any grade are intended to be descriptive of the **coarsest pieces such grade may contain**. The average quality of the grade should be about midway between such pieces and the coarsest pieces allowed in the next higher grade.

31. Lumber and timber sawed for specific purposes must be inspected with a view to its adaptability for the use intended. Material not conforming to standard sizes for agricultural implement companies, wagon companies, car manufacturing companies, railway companies, etc., shall be governed by special contract.

32. The standard lengths are multiples of 2 feet, 10 to 24 feet, inclusive, for boards, strips, dimensions, joists and timbers. Longer or shorter lengths than those herein specified are special. Odd and fractional lengths shall be counted as of the next higher even length.

33. On stock width shipments of lumber, either rough or dressed, one or two sides, no piece shall be admissible that is more than $\frac{1}{4}$ inch scant on 8-inch and under; $\frac{3}{8}$ -inch scant on 10-inch or $\frac{1}{2}$ -inch scant on 12-inch or wider.

34. Yellow Pine of a better grade than No. 1 Common, up to 4 inches in width, shall be classified as to grain as Edge Grain and Flat Grain. Edge Grain has been variously designated as rift sawn, vertical grain, quarter-sawn, all being commercially synonymous terms. Edge Grain stock is especially desirable for flooring, and admits no piece in which the angle of the grain exceeds 45 degrees from vertical at any point, thus excluding all pieces that will sliver or shell from wear. Such as will not meet these requirements shall be known as flat grain.

35. All dressed stock shall be measured and sold strip count, viz.: full size of rough material necessarily used in its manufacture. Casing, base and jambs to be measured $\frac{3}{4}$ inch wider than finished size.

36. Equivalent means equal, and in construing and applying these rules, the defects allowed, whether specified or not, are understood to be equivalent in damaging effect to those mentioned applying to stock under consideration.

37. The foregoing general observations shall apply to and govern the application of the following rules:

Dressed Yellow Pine Finishing.

Grades—First and second clear, third clear.

38. **First and Second Clear.** Inch, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch, dressed one or two sides, up to and including 8 inches wide, must show one face practically clear of all defects. Ten inches wide will admit any one of the following defects: 1 split not more than 6 inches long; 1 small pitch pocket; 1 pin knot, pitch streak or blue sap stain not to exceed the equivalent of 6 square inches; $\frac{1}{3}$ of any shipment of 12 and 14 inch, in addition to 1 straight split, not to exceed in length the width of the piece, will admit any one of the following defects or its equivalent: 3 pin knots; 1 standard knot; 1 small pitch pocket; 1 small pitch streak; small kiln or seasoning checks; 1 blue sap stain $1\frac{1}{2}$

inches wide running across the face of the piece. Each 2 inches above 14 inches in width, in addition to 1 straight split, not to exceed in length the width of the piece, will admit any two of the defects allowed in 12-inch or their equivalent. Pieces otherwise admissible, which have loosened or torn grain on the face side, shall be put in a lower grade.

39. **Special.** In case both sides are desired clear, special contract must be made. Defective dressing on the reverse side of finishing is admissible.

40. **Third Clear.** Inch, 1¼, 1½ and 2 inch, dressed 2 sides up to and including 10 inches in width, in addition to 1 straight split not to exceed in length the width of the piece, may have any two of the following defects or their equivalent: 3 pin knots; 1 standard knot; 3 small pitch pockets; 1 large pitch pocket; 1 standard pitch streak; 3 blue sap stains 2 inches wide across the face; wane not to exceed 1 inch in width and ⅙ the length of the piece, or small kiln or seasoning checks. 12 or 14 inches will admit 3 of the above defects or their equivalent.

Flooring.

Grades—A and B Flat, A and B Edge Grain, Nos. 1 and 2 Common.

41. **A Flat Flooring** must be practically free from defects on the face side and well manufactured.

42. **B Flat Flooring** may have any two of the following defects or their equivalent: Blue sap stain not to exceed 15 per cent. of the face; 3 pin knots; 1 standard knot; 3 small pitch pockets; 1 standard pitch streak; slight torn grain, or small kiln or seasoning checks.

43. **Edge Grain Flooring** shall take the same inspection as flat grain, except as to the angle of the grain.

44. **No. 1 Common Flooring** will admit of sound knots, blue sap, pitch streaks, pitch pockets, firm red heart, slight shake, torn grain, defects in manufacture, kiln or seasoning checks. Pieces otherwise good enough for A, but containing 1 loose or 1 unsound knot 1½ inches in diameter or less, shall be graded No. 1 Common. Pieces otherwise good enough for A, but containing not over 10 small pin worm holes that have no blue sap stain about them, shall be admitted in the grade of No. 1 Common. Pieces otherwise good enough for A, but containing 1 pith knot, shall be admitted in the grade of No. 1 Common.

45. **No. 2 Common** admits of all pieces that will not grade No. 1 Common, which can be used for cheap floors or roof sheathing without waste of more than ¼ the length of any one piece.

46. **Center Matched Flooring** shall be required to come up to grade on face side only.

Ceiling.

Grades—A, B, No. 1 and No. 2 Common.

47. **A Ceiling** must be practically free from defects on the face side, and well manufactured.

48. **B Ceiling** will admit of any two of the following defects, or their equivalent: Slight torn grain; 3 pin knots; 1 standard knot; 3 small pitch pockets; 1 small pitch streak; seasoning or kiln checks that do not go through; blue sap stain, or firm red heart not to exceed 15 per cent. of the face.

49. **No. 1 Common Ceiling** will admit sound knots, blue sap, pitch streaks, pitch pockets, firm red heart, slight shake, torn grain, kiln or seasoning checks, or defects in manufacture. Pieces otherwise good enough for A, but containing 1 loose or unsound knot 1½ inches in diameter or less, shall be graded No. 1 Common. Pieces otherwise good enough for A, but containing not over 10 small pin worm holes that have no blue stain about them, shall be graded No. 1 Common. Pieces otherwise good enough for A, but containing 1 pith knot, shall be admitted in the grade of No. 1 Common.

50. **No 2 Comomn Ceiling** admits of all pieces not as good as No. 1 Common that can be used without waste of more than ¼ the length of any one piece.

Wagon Bottoms.

Grades—A and B.

51. **Wagon Bottoms** (unless otherwise ordered—see Section 31) shall be graded the same as A and B Flat Flooring.

Drop Siding.

Grades—A, B and No. 1 Common.

52. **A Drop Siding** must be practically free from defects on the face side and well manufactured.

53. **B Drop Siding** will admit any two of the following defects, or their equivalent: Slight torn grain; 3 pin knots; 1 standard knot; blue sap stain or firm red heart not to exceed 15 per cent. of the face, and slight kiln or seasoning checks.

54. **No. 1 Common Drop Siding** will admit 1 standard pitch streak or 1 large pitch pocket, or their equivalent; and, in addition, sound knots, blue sap stain, firm red heart, slight shake, torn grain, defects in manufacture, and kiln or seasoning checks that do not go through the piece. Pieces otherwise good enough for A, but containing one loose or unsound knot $1\frac{1}{2}$ inches in diameter or less, shall be graded No. 1 Common. Pieces otherwise good enough for A, but containing not over 10 small pin worm holes that have no blue stain about them, shall be graded No. 1 Common. Pieces otherwise good enough for A, but containing one pith knot, shall be admitted in the grade of No. 1 Common.

Bevel Siding.

Grades—A, B and No. 1 Common.

55. **Bevel Siding** shall be graded according to the rules for Drop Siding, and will admit in addition slight imperfections on the thin edge, which will be covered by the lap when laid $4\frac{1}{2}$ inches to the weather.

Partition.

Grades—A, B and No. 1 Common.

56. **Partition** shall be graded according to ceiling rules, and must meet the requirements of the specified grade on the face side only, but the reverse side shall not be more than one grade lower.

Moulded Casing and Base—Window and Door Jambs.

Grades—A and B.

57. **A Moulded Casing and Base** must be practically free from defects on the face side and well manufactured.

58. **B Casing or Base** consists of rejections made after dressing stock inspected in the rough as "A." The defects admitted in B Ceiling shall be allowed.

Window and Door Jambs shall be graded the same as moulded casing and base.

Common Boards, Shiplap and Barn Siding, 8, 10 and 12 Inches Wide.

Grades—No. 1 and No. 2 Common.

59. **No. 1 Common Boards** dressed one or two sides, and No. 1 Common Shiplap and Barn Siding shall be well manufactured. Will admit any number of sound knots, none of which shall be larger than 3 inches in diameter, nor over $\frac{1}{3}$ of the width of the piece if located at the edge, nor over $\frac{1}{3}$ of the width of the piece if located away from the edge, or their equivalent spike knots—provided, however, that the spike knots, when located on the edge, do not occupy more than $\frac{1}{2}$ the thickness of said edge—2 pith knots, 1 straight split not to exceed in length the width of the piece, pitch, pitch pockets, blue sap, seasoning checks that do not go through, firm red heart, wane $\frac{1}{2}$ inch deep on edge and $\frac{1}{3}$ the length of the piece, or its equivalent; and a limited number of small pin worm holes well scattered. These boards should be firm and strong, and suitable for use in all ordinary construction.

60. **No. 2 Common Boards**, dressed one or two sides, and No. 2 Common Shiplap, may contain any number of sound knots none of which are over $4\frac{1}{2}$ inches in diameter, or over $\frac{1}{3}$ the width of the piece if located at the edge, or their equivalent spike knots, smaller or more defective knots, worm holes, 1 straight split $\frac{1}{4}$ the length of the piece; a knot hole $1\frac{1}{2}$ inches in diameter, or its equivalent in small knot holes or rotten streaks, will be allowed, provided the piece is otherwise as good as No. 1 Common, but must be free from through rotten streaks, through heart shakes over $\frac{1}{2}$ the length of the piece, and wane over 2 inches wide exceeding $\frac{1}{2}$ the length of the piece.

Fencing—3, 4 and 6 Inches Wide.

Grades—No. 1 and No. 2 Common.

61. **No. 1 Fencing** may contain the following defects or their equivalent: Sound knots, not to exceed 2 inches in diameter at any point throughout its length; spike knots, whose length is not over $\frac{1}{2}$ the width of the piece, and if on the edge not to exceed $\frac{1}{2}$ the thickness; 3 pith knots, or their equivalent; wane $\frac{1}{2}$ inch deep on edge and $\frac{1}{2}$ the length of the piece; pitch, pitch pockets, blue sap, seasoning checks, firm red heart, and a limited number of small pin worm holes well scattered.

62. **No. 2 Fencing**, in addition to the defects allowed in No. 1 Common, will admit the following defects or their equivalent: Sound knots that do not weaken the piece at any point; small, unsound or loose knots; 1 straight split $\frac{1}{4}$ the length of the piece; worm holes; rotten streaks that do not go through; a knot hole $1\frac{1}{2}$ inches in diameter, or its equivalent in small hollow knots, provided the piece is otherwise as good as No. 1 Common; shake and wane, but must be good enough to be used in full length as fencing.

63. **No. 3 Fencing and No. 3 Boards** is defective lumber, and will admit of coarse knots, knot-holes, very wormy pieces, some red rot and other defects that will not prevent its use as a whole for cheap sheathing, or cutting one-half its length as No. 2 Common.

64. **Miscut** 1-inch boards and fencing which do not fall below $\frac{3}{4}$ inch in thickness shall be admitted in No. 2 Common, provided the grade of such thin stock is otherwise as good as No. 1 Common.

Dimension.—S. 1 S. 1 E.

Grades—No. 1, No. 2 and No. 3.

65. Inspection of dimension is a question of strength and uniformity of size, and whatever reduces its strength in cross-section must be considered a defect to that extent.

66. **No. 1 Common Dimension** may contain sound knots, none of which in 2x4s should be larger than 2 inches in diameter on both sides of the piece, and on wider stock which do not occupy more than $\frac{1}{3}$ of the cross-section at any point throughout its length if located at the edge of the piece; or more than $\frac{1}{2}$ of the cross-section if located away from the edge; 2 pith knots, or smaller or more defective knots, which do not weaken the piece more than the knot aforesaid; will admit of seasoning checks, firm red heart, heart shakes that do not go through, wane, pitch, blue sap stains, pitch pockets, splits in ends not exceeding in length the width of the piece; a limited number of small pin worm holes well scattered, and such other defects as do not prevent its use as substantial structural material.

67. **No. 2 Common Dimension** may have sound knots which do not occupy more than $\frac{1}{2}$ of the cross-section at any one point if located at the edge of the piece, nor more than $\frac{2}{3}$ of the cross-section if located away from the edge; smaller, loose, hollow or rotten knots that do not weaken the piece more than the knots aforesaid; will admit rotten streaks, shake, wane, worm holes and other defects which do not prevent its use without waste.

68. **No. 3 Dimension** will include all pieces falling below No. 2 grade, which are sound enough to use for cheap building material.

69. **Miscut** 2-inch stock which does not fall below $1\frac{1}{2}$ inches in thickness shall be admitted in No. 2 Common, provided such pieces are in all other respects as good as No. 1 Common.

Rough Yellow Pine.

70. Finish must be evenly manufactured, and shall embrace all sizes from 1 to 2 inches in thickness by 4 inches and over in width.

71. No inch, $1\frac{1}{4}$ and $1\frac{1}{2}$ finishing lumber, unless otherwise ordered, shall measure, when dry, more than 1-16 inch scant in thickness and on 2-inch it may be $\frac{1}{8}$ -inch scant.

72. Wane and seasoning checks that will dress out in working to standard thickness and widths are admissible.

73. Subject to the foregoing provisions, rough finishing shall be graded according to the specifications applying to dressed finishing lumber. All rough lumber, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock. When like grade on both faces is required, **special contract** must be made.

Common Boards and Fencing, and Dimension.

74. Rough common boards and fencing must be well manufactured, and should not be less than $\frac{7}{8}$ inch thick when dry.

75. Rough 2-inch common shall be well manufactured, and not less than $1\frac{7}{8}$ inches thick when green, or $1\frac{3}{4}$ inches thick when dry. The several widths must not be less than $\frac{1}{8}$ inch over the standard dressing width for such stock. Rough common dimension of a greater thickness than 2 inches and less than 4 inches, shall be subject to special contract as to thickness and width.

76. **Rough Dimension**, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

77. The defects admissible in rough boards, fencing and dimension shall be the same as those applying to dressed stock of like kind and grade, and such further defects as would disappear in dressing to standard sizes of such material shall be allowed.

No. 1 Common Timbers.

78. **Rough Timbers**, 6x6 and larger, shall not be more than $\frac{1}{4}$ -inch scant when green, and be well manufactured, with not less than three square edges, and must be free from knots that will materially weaken the piece. Timbers 10x10 in size may have a 2-inch wane on one corner, measured on faces or its equivalent on two or more corners,

$\frac{1}{3}$ the length of the piece. Larger sizes may have proportionately greater defects. Shakes extending not over $\frac{1}{8}$ of the length of the piece are admissible, and seasoning checks shall not be considered a defect.

79. Dressed timbers shall conform in grading to the specifications applying to rough timbers of same size.

80. Rough timbers, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

Standard Sizes of Dressed Lumber.

Finishing.—1-inch S. 1 S. or 2 S. to 13-16, $1\frac{1}{4}$ -inch S. 1 S. or 2 S. to 1 3-32, $1\frac{1}{2}$ -inch S. 1 S. or 2 S. to 1 11-32, 2-inch S. 1 S. or 2 S. to $1\frac{3}{4}$ inches.

Moulded Casing or Base.—13-16 to patterns as per National Moulding Book, Eastern edition of 1896.

Flooring.—The standard of 1x4 and 1x6 inch shall be 13-16x $3\frac{1}{4}$ and $5\frac{1}{4}$ inches; $1\frac{1}{4}$ -inch flooring shall be 1 3-32-inch thick.

Drop Siding.—13-16x $3\frac{1}{4}$ and $5\frac{1}{4}$ inches.

Partition.— $\frac{3}{4}$ x $3\frac{1}{4}$ and $5\frac{1}{4}$ inches.

Ceiling.— $\frac{3}{8}$ -inch ceiling, 5-16 inch; $\frac{1}{2}$ -inch ceiling, 7-16 inch; $\frac{5}{8}$ -inch ceiling, 9-16 inch; $\frac{3}{4}$ -inch ceiling, 11-16 inch; same width as flooring.

Bevel Siding.—To be made from stock S. 4 S. to 13-16x $5\frac{1}{2}$ and resawed on a bevel.

Boards and Fencing.—1-inch S. 1 S. or 2 S. to 13-16 inch.

Shiplap.—8, 10 and 12 inch. 13-16x $7\frac{1}{8}$, $9\frac{1}{8}$ and $11\frac{1}{8}$ inches.

D. and M., 8, 10 and 12 inch. 13-16x $7\frac{1}{8}$, $9\frac{1}{8}$ and $11\frac{1}{8}$ inches.

Grooved Roofing.—10 and 12-inch S. 1 S. and 2 E. to 13-16x $9\frac{1}{2}$ and $11\frac{1}{2}$ inches.

Wagon Bottoms, unless otherwise ordered (see Section 31), shall be made in sets 38 and 42 inches face, and from stock 4 inches or over in width.

Dimension.—2x4 D. 1 S. and 1 E. to $1\frac{5}{8}$ x $3\frac{5}{8}$ inches; 2x6 D. 1 S. and 1 E. to $1\frac{5}{8}$ x5 $\frac{5}{8}$ inches; 2x8 D. 1 S. and 1 E. to $1\frac{5}{8}$ x $7\frac{1}{2}$ inches; 2x10 D. 1 S. and 1 E. to $1\frac{5}{8}$ x $9\frac{1}{2}$ inches; 2x12 D. 1 S. and 1 E. to $1\frac{5}{8}$ x $11\frac{1}{2}$ inches; 4x4 and 4x6 D. 1 S. and 1 E. to $\frac{3}{8}$ inch off side and edge; S. 4 S. $\frac{1}{4}$ inch off each side.

WEIGHTS OF LUMBER.

The following weights have been obtained from average weights of car-load lots, and may be relied upon as being nearly correct. The figures are the pounds per 1,000 feet, board measure:

	Green.	Dry.
Ash.....	5,200	3,500
Apple.....	5,000	4,000
Beech.....	6,000	4,500
Birch.....	4,250	3,500
Basswood.....	4,000	2,500
Butternut.....	5,000	3,000
Chestnut.....	5,250	3,250
Cherry.....	5,000	3,600
Cottonwood.....	5,250	2,600
Cypress.....	4,500	2,750
Cedar.....	4,000	3,000
Elm.....	5,000	3,500
Hickory.....	6,000	4,250
Holly.....	5,250	4,500
Maple.....	5,200	4,500
Oak.....	5,750	4,250
Poplar.....	4,500	2,800
Sycamore.....	5,500	4,250
Sweet Gum.....	4,000	3,000
Walnut.....	5,600	4,000

Association Standard Grades. Rules for the Grading of Pine and Hemlock Lumber. Reported by the Bureau of Grades and Adopted by the Mississippi Valley Lumbermen's Association and the Wisconsin Valley Lumbermen's Association.

WESTERN PINE SHIPPERS' ASSOCIATION.

BUREAU OF GRADES.

It is the aim of this Bureau of Grades to adopt the rules for grading Pine Lumber in use by the Mississippi Valley Lumbermen's Association, with such slight modifications as are necessary to take into consideration the defects peculiar to the products of this territory, giving their relative value, in the absence of, to a large degree, the defects known as shake, rot and worm holes, found in other localities. Giving our grades the same level of values, for the purposes for which the lumber admitted in the various grades is used, and for which the grades of White Pine were designed by the manufacturers of the Mississippi Valley Lumbermen's Association.

Bright sap shall not be considered a defect in Western Pine.

PITCH.

The surface of a piece from which the grade is determined which contains pitch in sufficient quantities to render it worthless for the purposes for which the grade was designed shall exclude such piece from the grade.

In grades where paint or oil finish is usually required, the general appearance of the piece shall indicate that it is sufficiently free from pitch to retain such finish under the ordinary conditions to which such products are subject.

A piece containing local pitch defects, known as pitch streaks or pitch pockets, that can be remedied by the usual methods of finish ordinarily made use of in curing knot defects shall be given the same consideration given knot defects of like surface measurements.

Pieces of lumber so filled with pitch as to make it impracticable to remedy the defect in the usual manner preparatory to a paint finish shall not be graded higher than a No. 3 Common.

CHECKED KNOTS AND SEASON CHECKS.

Checked knots in tight red knotted stock in common lumber shall not be considered a defect, unless the opening is so pronounced as to injure the piece for the purposes for which the grade was designed.

In the absence of all other defects one small season check not to exceed 8 inches in length and showing on one side of piece only will be admissible in No. 2 door cuttings.

One small season check not to exceed 8 inches in length will be admitted in A. Select 14-inch and wider to show on reverse side only.

One small season check not to exceed 8 inches in length will be admissible on the reverse side of an 8-inch or 10-inch piece of B. Sel., or not to exceed three small season checks of the same length in wider pieces.

The face of a C. Sel. shall be free from season checks and the reverse side shall contain no season check to exceed 12 inches in length.

A slight amount of season check will be admitted on the face side of a D. Sel. when other defects are not too pronounced.

A small amount of season check will be admissible on one side of No. 1 and 2 Common, providing they do not interfere with the general utility of the piece.

Pieces containing numerous season checks, open and extending through the piece, shall not be graded higher than No. 3 Common.

LARCH.

There shall be two grades of larch, which grades shall be known as Finish and Common.

The grade of finish shall be the same as C. Sel. and better in pine; all merchantable lumber below this grade 10 feet and over in length shall be classified as Common.

In a general way, D & M stock, except No. 3, should have a good bearing on back, and lumber S 1 S or S 2 S show nearly a full face.

The lowering of grade on the face side on account of wane, should be governed by grade, width and defects in the piece.

Due consideration in rough stock should be given for the amount of wane that would be surfaced off in milling.

Lumber must be accepted on grade in the form in which it was shipped. Any subsequent change in manufacture or mill work will prohibit an inspection for the adjustment of claims, except with the consent of all parties interested.

Mixed width boards do not necessarily require as good edges as shiplap or dressed and matched stock of the same grade.

Planing mill work should be taken into consideration in all grades of dressed lumber, and its effect on a piece must be left largely to the judgment of the inspector.

Thick C Select, except for factory purposes, should be graded on its face, not so much attention being given to the back; but in the grades of B Select and Better, the backs should, as a rule, be within one grade of the better face.

The grade of partition shall be determined from its poorer side.

Lumber when worked shall be graded the same as the respective grades when in the rough.

Unless otherwise provided for, lumber worked two sides shall be graded from its better face; lumber worked one side shall be graded from its surface face.

The examples given in this book do not in all cases include all of the different types in any grade.

The interpretation of any grade is intended to cover all lumber between the next higher grade above, and the next grade below.

It is not contemplated by these rules to cover car siding and roofing, the grades of which should be determined by special agreement.

FINISHING.

CLEARs.

First Clear.—This should be twelve inches and over in width and free from all defects.

Second Clear.—This should be ten inches and over in width. When ten inches wide it should be free from all defects. A twelve-inch board must have a perfect face. A one-half inch of white sap on each edge, or one inch of sap on one edge of back is allowed. In the absence of sap one or two small pin knots not to exceed one-half inch in diameter are admissible. Pieces wider than twelve inches must have a perfect face, but can have sap or knot defects proportionally greater as the piece is wider.

Third Clear.—This should be eight inches and over in width. A piece eight inches wide should be free from all defects on both faces. In a ten-inch piece one or two small knots, not to exceed one-half inch in diameter, or in the absence of knots, white sap not to exceed one-half inch in width on each edge, or one inch in width on one edge is admissible. A piece from twelve inches to fourteen inches wide may have one inch of white sap on each edge of face or more sap on one edge. In the absence of sap or with less sap one or two small knots an inch in diameter are admissible. Wider stock can have more sap or slightly larger knots. The reverse side of Third Clear ten inches and wider, should not show poorer in quality than "A" Select face.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x14-16. Face side has a black knot on edge one and one-fourth by one inch, two feet from end, but not showing through. One small black knot one-half inch in diameter one foot from end, balance of face side clear. Reverse side shows one inch of white sap for six feet on one edge and about one foot slightly discolored sap.

Example 2. Piece 1x18-16. Face side shows two half-inch black knots and two small pin knots near one end, also a half-inch black knot near center. Reverse side shows practically the same defects except the knots are slightly larger.

Example 3. Piece 1x16-16. Shows an inch and a half of white sap for eight feet on one edge of the face side; no other defects. Reverse side shows three inches of white sap for twelve feet on one edge. No other defects.

Example 4. Piece 1x12-14. Face side shows one and one-half inches white sap on each edge for four feet at one end. One small knot one-half inch in diameter near other end. Reverse side shows three inches of white sap for twelve feet on one edge

and two inches of white sap on other edge full length of the piece, and two small knots one-half inch in diameter.

Example 5. Piece 1x10-16. Has one clear face. Reverse side has one inch of slightly stained sap for two feet on one edge. Otherwise perfect.

Example 6. Piece 1x8-16. This piece is free from all defects on both sides.

"A" SELECT.

"A" Select should be eight inches and over in width. On the face side an eight-inch piece should be nearly perfect. An inch of white sap on one edge or one or two sound knots not to exceed one-half inch in diameter are admissible.

A ten-inch piece will admit of an inch and a half of white sap full length of one edge or less sap on both edges of face, with no other defect, or will admit of two or three knots, one-half inch in diameter if well scattered, or one or two knots not over an inch in diameter if well located.

Pieces fourteen inches and wider will admit of proportionately greater sap and knot defects as width increases, or very slightly local shake, or a straight split for six or eight inches, or one or two large worm holes near end or edge.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Shows one-half inch of white sap on one edge full length of the piece, and one small knot one-half inch in diameter.

Example 2. Piece 1x10-16. The face side has a quarter inch of slightly colored sap for one foot, otherwise perfect. Reverse side shows a little sap slightly blue on two edges.

Example 3. Piece 1x10-16. Is perfect on both sides, except a slight local shake in one spot.

Example 4. Piece 1x10-16. Very smooth in appearance with one knot three-quarters of an inch two feet from one end. Another smaller knot near other end, also one inch of white sap two feet in length at one end and one-half inch of sap on opposite edge of other end.

Example 5. Piece 1x12-16. On face side has one knot one and one-half inch in diameter and one pin knot, both going through the board; otherwise perfect.

Example 6. Piece 1x12-16. Has two three-fourth-inch knots that go through the board, and an inch of white sap on one edge full length of piece.

Example 7. Piece 1x14-16. Face side shows one small knot a half inch in diameter. A half inch of stained sap for two feet on one edge at center of board. Reverse side at center has two inches of stained sap on one edge for five feet and other edge has one inch of stained sap for four feet. This is considered a high type of "A" Select.

Example 8. Piece 1x16-16. Face side shows two black knots one inch in diameter near one end and three small pin knots. Reverse side shows two knots one inch in diameter at one end. On one edge three inches of white sap for ten feet. Other edge has two inches of slightly colored sap for eight feet.

Example 9. Piece 1¼x16-16. One face has two inches of sap full length of one edge, discolored in streaks. Reverse side shows three-fourths inch wane for three inches, and three inches slightly colored sap full length of one edge.

Example 10. Piece 1¼x19-16. Face shows a five-eighths inch black knot one foot from end. At same end on opposite corner a check eight inches long. At the other end is a slight shake for ten inches in center; also at the left from same end near edge, a pitch pocket one and one-fourth inches long. No sap on this face. Reverse side shows one-fourth to three-fourths inch worm-eaten sap for eight feet on one edge, the small black knot at end shows through from face side.

"B" SELECT.

"B" Select should be eight inches and over in width.

In this grade white sap is not considered a defect unless too many other imperfections appear.

Knots, shake and a small amount of stained sap are admissible.

An eight-inch or ten-inch piece should have but very little shake. Wider pieces can have more shake, but it should be local and not scattered over the face of the piece.

Slightly stained sap is admissible when other defects are not of a serious nature, the amount of stained sap depending upon width of piece.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Has two inches of bright white sap the entire length of piece on one edge. The other edge has two inches of bright white sap for three-quarters its length. The balance of that edge is discolored sap. Other end of piece has one small knot.

Example 2. Piece 1x8-16. Three-quarters of the entire face shows white sap and a small knot at one end.

Example 3. Piece 1x10-16. Has one inch of stained sap for one-third the length of the piece. One small knot at each end and one five-eighths knot near center of board.

Example 4. Piece 1x10-16. Has local shake near one end and one and one-half inch bright sap on both edges with small knot at end.

Example 5. Piece 1x12-16. Has a small knot at each end, two and a half inches of slightly stained sap for four feet on one edge, and an inch and a half of white sap on the other end of opposite edge. The reverse side has three inches of stained sap on both edges for five feet at one end.

Example 6. Piece 1x12-12. Shows one and one-half inches white sap on one edge for half length of piece; other edge shows two inches of white sap two-thirds of length. Scattered over the face of this board are six small knots, varying in size from an inch to a small pin knot.

Example 7. Piece 1x12-16. Both edges of this board have sap varying in width from two to three inches and running full length of the piece, the sap showing slight discoloration. No knot defects or shake are shown.

Example 8. Piece 1x20-16. Has a rot stain three inches wide and eight inches long at one end, one three-quarter inch unsound knot at other end and two half-inch knots. The reverse side has same appearance, except a narrow streak of white sap and half-inch of stained sap for four feet.

Example 9. Piece 1x14-16. Has three half-inch black knots, one and one-half inches bright sap for eight feet on one edge and two and one-half inches of bright sap for four feet on other edge. The reverse side has three inches of bright sap on both edges for three feet and three-quarter inch of wane for three feet and shows same knots as on face.

Example 10. Piece 2x12-16. Has one poor knot three-quarter inch in diameter, but otherwise face is perfect. The reverse side shows stained sap on both edges three inches wide for four feet and one-half inch of wane for eight feet.

Example 11. Piece 2x14-16. At one end near the edge has one and one-half-inch knot; at the other end shake five inches wide for three feet on the same edge as knot. Reverse side shows three inches of slightly stained sap for eight feet.

Example 12. Piece 1x18-16. At one end shows shell shake for two feet running across one-half of the face. One edge shows three inches of slightly stained sap for eight feet. This piece also has three small knots not over one-half inch in diameter scattered over the face.

Example 13. Piece 1¼x14-16. Face side shows two inches of slightly colored sap at one end, running out at four feet, but no other imperfections. Reverse side shows sap over two-thirds of the piece, slightly colored in spots for six feet. No knots in this piece.

Example 14. Piece 1¼x16-16. Face side shows five black knots well scattered from one-half to one inch in diameter. Also three-fourths inch slightly stained sap at one end running out at six feet.

Example 15. Piece 1x12-16. The face shows two-thirds white sap, no other defects except that one edge shows fifteen inches wane on the back side one inch wide but not to a feather edge on the face side.

Example 16. Piece 1x10-16. Shows four inches white sap the entire length on one edge. No other defects except wane on the back for eighteen inches.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"C" SELECT.

"C" Select must be eight inches and over in width.

This grade will admit of quite serious defects if the piece retains at the same time a fair appearance.

The defects admissible are the same as those in a "B" Select, but exist to a greater degree.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Shows three inches of stained sap for two feet and three small knots. The reverse side has stained sap in four places.

Example 2. Piece 1x8-16. Has an inch and a half of white sap on each edge full length of piece and eight small knots well scattered.

Example 3. Piece 1x8-16. Shows three feet of tight shake on one edge at one end and one foot of open shake on the other end, otherwise of good appearance.

Example 4. Piece 1x10-16. Has white sap on the face side, no knots, but three feet of shake in center of board about three feet from one end. Board has a smooth appearance.

Example 5. Piece 1x10-16. Has five very small knots well scattered, a streak of stained sap on one edge and an inch of stained sap for two feet on the end of other edge.

Example 6. Piece 1x10-16. The face is free from defect except two and a half inches of stained sap for eight feet on one edge; otherwise very smooth in appearance. The reverse side shows quite an amount of stained sap.

Example 7. Piece 1x12-16. Has two inches of stained sap on each edge, two one-inch knots and two one-half inch knots. One-quarter of one side shows sap clear across, slightly stained.

Example 8. Piece 1x12-16. Has a very smooth appearance, but shows shake clear through for three feet at one end and four small knots.

Example 9. Piece 1x12-16. Shows considerable white sap on each edge, with eight small knots ranging from a pin knot to one inch in diameter.

Example 10. Piece 1x12-16. Quite smooth in appearance with shake four inches wide tapering off at one-third length of the piece. At other end of the piece shake running in "V" shape for eighteen inches.

Example 11. Piece 1x14-16. Has two inches of stained sap for four and one-half feet in center on one edge and a streak of stained sap at both ends of other edges. The reverse side shows one pitch spot 2x3 inches and three inches stained sap, same as in center of the other side. Two or three inches of white sap on each edge of both ends.

Example 12. Piece 1x14-16. Has one three-fourth-inch poor knot and three one-half-inch black knots, also four feet of tight shake at one end. Reverse side shows same knot and shake defects with three inches of white sap for two feet.

Example 13. Piece 1x18-16. At first appearance this board seems to be clear, but on closer examination a great deal of close tight shake is found to be scattered over at least one-half of the face. The shake, however, is very fine and probably will not open up.

Example 14. Piece 1x16-16. Has the appearance of an extra sound "D" Box. The knots are smaller and in general appearance much above the average "D" Box grade. The sap is white and there are ten small knots, three of which are one inch in diameter, and the remainder from one-half inch down to a pin knot.

Example 15. Piece 1x13-14. Within one foot of end is one and one-fourth-inch sound, black knot; also a one-fourth-inch black knot, and scattered over the face are two one-half-inch and two pin knots, with three inches of bright sap on one edge, running off at nine feet.

Example 16. Piece 1¼x12-16. Face has slightly colored sap two inches wide on one edge for ten feet; other edge has same amount and kind of sap for two feet, but no other imperfections. Reverse side shows slightly colored sap over the full width for eight feet in length.

Example 17. Piece 1½x20-16. Face side shows worm holes sixteen inches from end in center; one three-fourth-inch black knot three feet from end on one edge; a one-half-inch black knot in center and seven feet from the other end within twelve inches of same end, one red knot three-fourths by one and one-half inches near edge; also three inches of white sap on both edges for twelve feet, with one-half inch wane for eight feet on one edge. Reverse side shows less sap, but same knot defects, except that knots show larger.

Example 18. Piece 1¼x16-16. Has two feet very fine shake across the face at one end, one and one-half inches of it on edge extending for four feet; another trace of shake on edge near opposite end, also one and one-fourth inches soft rotten knot and one and one-fourth inches of dead sap tapering out at four feet.

Example 19. Piece 1½x16-16. Has two feet very fine shake across face on one end, one and one-half inches on one side extending for four feet; another trace of shake on edge near opposite end and on same end one three-fourth-inch soft rotten knot, and one and three-fourths inches of dead sap, tapering off at four feet. At center of piece are two three-eighths inch knots. The reverse side shows same rotten knot, and blue sap averaging two and one-half inches in width the whole length of one edge. The other edge has two inches of stained sap for two feet.

Example 20. Piece $1\frac{1}{2} \times 18-16$. The face has nine black knots from one-fourth to one-half inch in diameter, well scattered, one of the one-half-inch knots being unsound. Also contains one and one-half inches of blue sap full length of one edge, and a small amount of shell shake for two feet from one end. Reverse side shows five of the one-half-inch knots that run through from the face, and three inches of dead sap the entire length of one edge.

Example 21. Piece $1 \times 10-14$. The face is covered with white sap for two feet at one end, and extends along one side two inches wide for half the entire length, also one one and three-fourths inches, one one-half inch black knots and one pitch pocket all well scattered.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"D" SELECT.

"D" Select should be eight inches and over in width.

This grade admits any piece of lumber that has the appearance of finishing or a percentage of cutting in which the defects are too numerous or too serious to admit of its being graded into "C" Select.

Blue sap covering two-thirds of the face will be admitted. This description embraces one inch, one and one-fourth inch, one and one-half inch and two inch stock, and is graded strictly from the face without regard to the back, and can not be recommended for quality.

See General Instructions.

EXAMPLES.

Example 1. $1 \times 10-16$. Face shows a great deal of shake for two-thirds of length, and three spots of rough mill work. This piece is smooth in appearance, but extremely shaky.

Example 2. Piece $1 \times 14-16$. Very smooth in appearance. No knots, but fine shake over two-thirds of face, with some blue sap on each edge at one end.

Example 3. Piece $1 \times 8-16$. Shows blue sap three inches wide on each edge for ten feet. No other imperfections.

Example 4. Piece $1 \times 8-16$. Has smooth appearance. Shows partially blue sap over face for six feet. Otherwise good.

Example 5. Piece $1 \times 10-16$. Shows a "B" Select face, but the reverse side shows the dry rot and worm hole defects of a No. 4 board.

Example 6. Piece $1 \times 8-16$. Shows blue sap well streaked over eight feet of the face. The balance of good appearance.

Example 7. Piece $1 \times 12-16$. Has the face value and appearance of a good "D" stock, but inspection shows considerable fine shake.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"D" STOCK AND BOX.

This is a grade of smooth-looking and sound-knotted lumber with edges free from wane and the grade practically free from shake.

The knots may be either black or red, but should be sound and firmly set, varying in size from an inch and a half down.

A "D" Box board may have any number of knots, depending entirely upon size and location.

A 12-inch "D" Stock board should contain a less number of knots than a "D" Box, and eight and ten-inch "D" Stock boards relatively smaller knots and less in number. This grade is nothing more than an extra smooth No. 1 Common.

See General Instructions.

EXAMPLES OF "D" STOCK.

Example 1. Piece $1 \times 12-14$. Has three red knots one inch in diameter, ten knots one-half inch in diameter, and ten small pin knots. There is no sap.

Example 2. Piece $1 \times 12-14$. Has three knots $1\frac{1}{2} \times \frac{3}{4}$ inches, part red and part black, and six knots one inch in diameter, also six small pin knots, red and black mixed.

Example 3. Piece $1 \times 12-16$. Has six knots one-half to one inch in diameter and fourteen knots less than one-half inch in diameter, one and one-half inches of sap on one edge for entire length of piece, partly blue. Other edge has one inch partly blue sap. This board is perfectly smooth and sound in appearance.

Example 4. Piece $1 \times 12-16$. Has twenty-eight knots, of which six are oblong, one-half by one and one-fourth inches, and eight round, red knots one-half to one inch in diameter. The balance are pin knots.

SAWS

Solid, inserted tooth, chisel bit, gang, drag, cross-cut, hack, band, concave, siding, edger, milling—all the saws you ever use we manufacture, from the best crucible steel, by skillful and experienced workmen.

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Example 5. Piece 1x10-16. Has twenty sound, black knots extending over entire face that will average less than one inch in diameter. Edges are square and piece otherwise sound.

Example 6. Piece 1x12-16. Has twenty-five sound knots from one-quarter to one-half inch in diameter. Five being red and balance black. Four of the one-half-inch red knots at one end are in a cluster. The board is otherwise sound and of good appearance.

Example 7. Piece 1x12-16. Contains twenty-five red and black knots scattered over the face, five being one-half inch in diameter and the others smaller; also has two inches of bright sap full length of one edge and one-half inch bright sap full length of other edge. The board is otherwise perfect.

Example 8. Piece 1x8-16. At one end in a space of three feet there are three black knots, one-half inch in diameter, and one black knot three-quarters of an inch in diameter. The center contains two pin knots; at the other end within a space of five feet there are eight sound red knots, two being one inch in diameter, two are one-half inch in diameter and four are pin knots. At a glance this would be considered a fair type of "D" Stock.

Example 9. Piece 1x8-16. There are twenty sound black knots in this piece, none of them exceeding one-half inch in diameter, and all within a space of twelve feet. This is a high grade of "D" Stock.

EXAMPLES OF "D" BOX.

Example 1. Piece 1x18-16. Well scattered over this piece are fifteen round black knots from one-eighth inch to one inch in diameter and at one edge three feet from end a cluster of three-quarters-inch sound red knots. An inch of white sap shows along two-thirds of one edge and nearly as much along the other edge.

Example 2. Piece 1x14-16. Has seventeen black knots ranging in size from one inch in diameter down to a pin knot; no other defects. This is considered a high type of "D" Box.

Example 3. Piece 1x14-12. One end has a sound red knot, one by two inches in diameter, and a three-quarter-inch red knot within six inches of it. The balance of the face contains eleven small knots well scattered. The piece is otherwise perfect.

Example 4. Piece 1x14-16. Contains eighteen sound knots, three of which are one by one-half inches; five are three-quarter-inch and ten are pin knots, all well located.

Example 5. Piece 1x16-14. There are twenty-one sound knots in this piece, eight being black, two of which are one and one-half inches in diameter.

Example 6. Piece 1x16-14. There are twenty-one sound knots in this piece; eight being black, two of which are one and one-half inches in diameter, and the balance three-quarters of an inch and less. There is also one and one-half inches of bright sap the entire length of one edge.

Example 7. Piece 1x13-16. Has thirteen black and two red knots, all about one-half inch in diameter, well scattered over the face, and two inches of bright sap for six feet on one edge.

"C" AND BETTER NORWAY.

C and Better Norway shall be four inches wide and wider and of the same thickness as white pine.

White sap is no defect, and one-fifth the surface of the face may be covered with sound, stained sap, if not in combination with other defects.

This grade should be practically free from shake, rot and splits.

The knotty and wane defects in the low line pieces of this grade should be the same as in the grades of white pine B Strips and B Selects.

All knots to be sound and firmly set. The product of the log better than described above is included in this grade.

SIDING.

GENERAL INSTRUCTIONS.

Beveled Siding should be graded from the face side only. Defects on the thin edge which will cover when laid should not be given the same consideration as defects elsewhere.

"A" AND CLEAR SIDING.

"A" and Clear Siding will admit of bright sap on thin edge which will cover when laid, or a half-inch of bright sap on thick edge for one to two feet, or in the absence of sap one or two pin knots.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6$ -16. Shows one-half inch bright sap on thin edge for two-thirds of the length. Otherwise perfect.

Example 2. Piece $\frac{3}{8} \times 6$ -16. Shows three-fourths inch of bright sap on thin edge for ten feet. One knot one-fourth inch in diameter, three feet from end, and at six inches from other end a slight trace of pitch.

Example 3. Piece $\frac{3}{8} \times 6$ -14. For seven feet on thin edge there is one-half inch of sap that is slightly discolored; at the center of the piece is one one-fourth inch black pin knot.

Example 4. Piece $\frac{3}{8} \times 6$ -14. On the thin edge there is one-half inch black knot. Otherwise the piece is perfect.

Example 5. Piece $\frac{3}{8} \times 6$ -16. Contains two one-fourth-inch black knots, one being three feet from end and the other near the center of the piece. No other defects.

Example 6. Piece $\frac{3}{8} \times 6$ -16. This piece is without a defect.

Example 7. Piece $\frac{3}{8} \times 6$ -16. Shows no defect except one-quarter inch of white sap on thick edge three feet in length.

Example 8. Piece $\frac{3}{8} \times 6$ -16. Shows one pin knot on thick edge less than one-half inch in diameter.

"B" SIDING.

"B" Siding will admit white sap covering one-third the exposed face of a piece when laid, if not in combination with other marked defects.

Two or three sound, small knots not to exceed one-half inch in diameter, well scattered over the face of piece.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6$ -16. Shows a heavy pitch spot one inch long on thin edge, a torn defect on same edge that covers when laid, a pitch pocket one-fourth inch wide by one and one-third inches long, two inches from thick edge at the center of the piece, and for six feet on thick edge shows an inch of white sap.

Example 2. Piece $\frac{3}{8} \times 6$ -16. Has four very small, smooth knots, one-fourth inch or less in diameter, within four feet of end near thin edge and a one-half-inch round, red knot within two inches of thick edge and six feet from same end.

Example 3. Piece $\frac{3}{8} \times 6$ -16. Has one-half inch white sap the whole length of thick edge and a large curl four feet from one end with one-half inch sound knot.

Example 4. Piece $\frac{3}{8} \times 6$ -16. Has a black knot on the thin edge that will cover, a one-half-inch black knot one inch from thick edge and two pin knots that show. No sap in this piece.

Example 5. Piece $\frac{3}{8} \times 6$ -16. Shows three-fourths inch of white sap on thick edge, and six feet from end; a one-fourth-inch black knot at center of piece and at four feet from other end and on thick edge a one-fourth-inch black knot.

Example 6. Piece $\frac{3}{8} \times 6$ -16. Has a three-fourth-inch black knot five feet from one end and the piece is not smoothly dressed; otherwise perfect.

Example 7. Piece $\frac{3}{8} \times 6$ -16. Has a one-half by three-fourths-inch knot on the thick edge, three feet from end and one-half-inch white sap for two-thirds of length on thick edge.

Example 8. Piece $\frac{3}{8} \times 6$ -16. Has two one-half-inch black knots within two and one-half feet of one end. Another one-half-inch knot five feet from same end, all of which shows when laid.

Example 9. Piece $\frac{3}{8} \times 6$ -16. Has bright sap on thick edge, commencing at one end, one and one-fourth inches deep and running out at twelve feet. With the exception of two curls has no other defects.

Example 10. Piece $\frac{3}{8} \times 6$ -16. Has an inch of sap on thick edge for ten feet. For one foot at end this sap is blue. Within three feet of other end is a three-eighths-inch black knot.

Example 11. Piece $\frac{3}{8} \times 6$ -16. White sap two and one-half inches wide, nearly full length of piece on thin edge. Otherwise perfect.

"C" SIDING.

"C" Siding will admit of any amount of bright sap.

When sap defect is not too pronounced, two or three small knots, not exceeding one inch in diameter, or more knots when smaller, or slight shake are admissible.

A small amount of slightly blue sap on the thick edge is admissible, or more blue sap on the thin edge.

Defects requiring one cut not to exceed four inches of waste, are allowed in high line pieces twelve feet long and longer.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Has a three-fourth-inch black knot five feet from one end. A small pitch pocket and a little very tight shake within twelve inches of same end of piece.

Example 2. Piece $\frac{3}{8} \times 6-16$. Has a half-inch black knot on thick edge, five feet from end, and at seven feet another same-sized knot. Within five feet of the other end is a one-half-inch loose knot and one-quarter inch of blue sap for six feet on thick edge.

Example 3. Piece $\frac{3}{8} \times 6-16$. Contains white sap one-half the width of the whole length and is slightly damaged in two spots by bad mill work.

Example 4. Piece $\frac{3}{8} \times 6-16$. Has a one-half-inch black knot three feet from the end that partly covers when laid. A pitch streak two inches long four feet from the same end, a three-fourth-inch black knot five feet from end and three-quarters of an inch of white sap for three feet on thick edge at the same end. One-half inch of white sap shows for two feet on thick edge of other end with two feet of shake that will cover when laid.

Example 5. Piece $\frac{3}{8} \times 6-16$. Has five pin knots well scattered over face of piece. On thick edge is one-quarter inch of stained sap for three feet. On thin edge is a little shake that nearly covers.

Example 6. Piece $\frac{3}{8} \times 6-16$. The entire face for one-half the length is covered with white sap with other defects on thin edge that cover when laid; otherwise perfect.

Example 7. Piece $\frac{3}{8} \times 6-16$. Has three knot holes on thin edge that will cover when laid and four black knots one-quarter inch to one-half inch in diameter, well scattered.

Example 8. Piece $\frac{3}{8} \times 6-16$. Has one and one-half inches of sap on thick edge for two-thirds of the length, within five feet of the end, one foot of the sap is discolored and for two feet it is blue for three-quarters of an inch in width. A three-quarter-inch knot on the thin edge. This piece has a very smooth appearance.

Example 9. Piece $\frac{3}{8} \times 6-16$. Has a one and one-half-inch black, loose knot six feet from end, but otherwise is nearly perfect. This is considered a cutting strip.

Example 10. Piece $\frac{3}{8} \times 6-16$. Has one-quarter inch of wane for four feet on thin edge. Two-thirds of the face is covered with bright sap, except a slight discoloration from a crossing in piling.

Example 11. Piece $\frac{3}{8} \times 6-16$. Is perfect with the exception of three-fourths inch of blue sap running three-fourths the length of the piece on thick edge.

"D" SIDING.

"D" Siding will admit of considerable shake and stained sap. With or without either of these defects a piece may have a number of small knots well scattered over the face.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Shows three inches blue sap on thick edge for three feet and a few small pin knots.

Example 2. Piece $\frac{3}{8} \times 6-16$. Has three black knots one inch in diameter, and slight touch of shake.

Example 3. Piece $\frac{3}{8} \times 6-16$. Looks to be clear, but contains considerable close shake.

Example 4. Piece $\frac{3}{8} \times 6-16$. Has twelve small red and black knots well scattered, in size from one-quarter to one-half inch.

Example 5. Piece $\frac{3}{8} \times 6-16$. Considerable blue and white sap; one-half of piece shows white sap and the other is stained, but not very blue.

Example 6. Piece $\frac{3}{8} \times 6-16$. The face of this piece is covered with blue sap for about seven feet; the remainder is perfect.

Example 7. Piece $\frac{3}{8} \times 6-16$. Slightly blue sap covers the entire face; otherwise perfect.

"E" SIDING.

This is the lowest recognized grade of Beveled Siding and will admit of the sap, knot and shake defects not admissible in "D" Siding.

Many pieces showing seriously defective mill work are found in this grade.

FLORING.

"A" FLOORING.

"A" Flooring is a one-faced strip and should lay with a practically clear face.

A half inch of bright sap or one or two small pin knots are admissible in this grade.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-16. Has no defect.

Example 2. Piece 1x6-14. Has two small black pin knots; no other defects.

Example 3. Piece 1x6-12. Has a strip of perfectly bright sap on one edge three feet in length, varying in width from one-quarter to one-half inch; no other defect.

"B" FLOORING.

"B" Flooring will admit of one to one and a half inches of bright sap on one edge or a less amount on both edges, or from two to three small knots from a quarter to half an inch in diameter. If a combination of sap and knots, the proportion of either must be less.

EXAMPLES.

Example 1. Piece 1x6-16. Free from all defects except a rough spot caused by dressing.

Example 2. Pieces 1x6-16. Has bright sap on edge one-half inch wide for half length of piece and a small pin knot less than one-half inch.

Example 3. Piece 1x6-14. Has at one end one and one-half inch white sap, tapering off and disappearing at three feet from end. No other defect.

Example 4. Piece 1x6-16. Has two small knots six feet apart, black but sound, one a full half inch in diameter and the other smaller.

"C" FLOORING.

"C" Flooring will admit of bright sap face or two knots one inch in diameter, or three to five knots one-half inch or less in diameter, but not a combination of these defects unless of a decidedly less amount, and must be practically free from shake.

EXAMPLES.

Example 1. Piece 1x6-14. Has a one-inch firm, sound, black knot, near the center of the piece. One three-eighths inch black, sound knot six feet from end and one and one-fourth inch knot four feet from same end; also eighteen inches of bright sap.

Example 2. Piece 1x6-12. Two-thirds of the piece covered with bright sap and no other defects excepting a three-eighth-inch sound knot.

Example 3. Piece 1x6-16. At eight inches from end has one three-eighth-inch knot; at three feet has one-fourth-inch knot and at center two three-eighth-inch knots, all being sound and black. At the other end one and one-half inches bright sap for ten feet.

Example 4. Piece 1x6-14. Contains three small pin knots well scattered and a small pitch pocket three-eighths inch long near end. At other end is eighteen inches of light shake; smooth appearance.

Example 5. Piece 1x6-16. Has five small black knots, the largest being one-fourth inch in diameter. Otherwise the piece is perfect.

Example 6. Piece 1x6-14. Has eight small black knots the size of a lead pencil and one-half inch of bright sap for five feet at the end.

Example 7. Piece 1x6-16. Has three inches of bright sap on one edge for full length of piece, except that the sap near one end is slightly stained, but the piece as a whole is very smooth in appearance.

"D" FLOORING.

"D" Flooring is a grade between No. 1 Fencing D & M and "C" Flooring, and will admit in a general way the imperfections of both grades.

In a knotty type the knots must be smaller and fewer in number than in No. 1 Fencing, and may be either red or black.

Some stained sap is allowed and tight local shake.

Defects requiring one cut, not to exceed four inches of waste, are allowed in high line pieces twelve feet long and longer.

EXAMPLES.

Example 1. Piece 1x6-12. Has blue sap over the entire face for one-third of its length, but no other defects. This is considered the limit of blue sap admissible.

Example 2. Piece 1x6-16. Has blue sap across the face for three feet in center of the piece, and two one-half-inch red sound knots two feet from each end.

Example 3. Piece 1x6-16. Has fifteen sound black knots ranging from a half inch down to pin knots and well scattered; also three-fourth-inch white sap on one edge for two-thirds of the length.

Example 4. Piece 1x6-16. Has one-half face bright sap with four one-half-inch black knots and six pin knots well scattered.

Example 5. Piece 1x6-16. Has one black knot three-fourths by one and three-fourths inches, five feet from one end and two one-half-inch knots near other end, with slight pitch streak in center of piece for two feet.

Example 6. Piece 1x6-14. Has ten sound, black knots the largest two being three-fourths inch in diameter and bright sap covering nearly entire face.

Example 7. Piece 1x6-14. Has one black knot, one by one and three-fourths inches in center of piece and one-inch knot two inches from end. Also a rough spot near large knot in center.

Example 8. Piece 1x6-12. At five feet from one end has one rotten knot, one and one-half inches in diameter. Otherwise the piece is perfect.

Example 9. Piece 1x6-14. Has stained sap on each edge of piece full length, the sap varying in width from one to one and one-half inches. No other defects.

Example 10. Piece 1x6-16. Has ten small knots, all red, well scattered, averaging one-half inch in diameter. If the knots had been somewhat larger this piece would have graded No. 1.

FARMER'S CLEAR FLOORING.

Farmer's Clear Flooring is of a practically clear appearance. The knotty defects shall not exceed that of a "C" Flooring. The leading defect is shake, which may be scattered over the face of the strip.

EXAMPLES.

Example 1. Piece 1x6-16. Shows the knotty defects of a "C" flooring and has tight shake scattered over two-thirds of its face. Good appearance.

Example 2. Piece 1x6-16. Shows two inches of blue sap for six feet on one edge, with considerable fine shake over the face. No other defects.

Example 3. Piece 1x6-16. At first appearance this piece seems to be free from all defects. On closer inspection it is found to be very shaky, but the shake is close and tight.

Example 4. Piece 1x6-16. Has no other defects than slightly stained sap covering the entire face.

NO. 1 FENCING D & M.

This should be simply sound No. 1 Fencing worked to flooring, and of the character, when worked, described under the title of No. 1 Common Strips.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-16. Has twenty-two sound, red knots, one being a horn knot three-fourths by four inches long; two knots in middle side by side are three-fourths of an inch in diameter and the balance of knots are one-half inch and less in size.

Example 2. Piece 1x6-16. Has four sound, red knots, the two largest being three-fourths inches by one and one-half inches, and is perfectly sound in every particular.

Example 3. Piece 1x6-16. There are seven round, black knots and two red knots in this piece, the red knots being located near one end and three-fourths inches in diameter. The largest black knot is one and one-fourth inches in diameter and four feet from the same end. The balance of knots are one-half inch and less, and well scattered. It also has a little shell shake at opposite end from large knot and is considered a liner between No. 1 and No. 2 Fencing on account of having a combination of defects mentioned.

Example 4. Piece 1x6-16. Has eighteen sound knots about one-half being black, and ranging in size from one-half inch to one inch in diameter. It is perfectly sound and is considered a good No. 1 strip.

Example 5. Piece 1x6-16. Has thirteen sound, red knots averaging three-fourths inch in diameter, and two sound, red knots one inch in diameter. At the center a little bright sap is shown and also one foot of wane on tongue.

Example 6. Piece 1x6-16. This is a sound heart piece containing seven red knots. One is a pitch knot well set and the balance are of small horn type.

Example 7. Piece 1x6-14. Has five perfectly sound, red knots one and one-half inches in diameter, and seventeen small, red knots one-fourth to three-fourths inches in diameter. This is a typical piece of No. 1 Fencing.

Example 8. Piece 1x6-14. Has six sound, red horn knots running from each edge and nearly meeting. These knots do not impair the strength of the piece.

Example 9. Piece 1x6-16. Has a small cluster of black knots at center, two one-half by one inch black knots near one end and nine other small, black knots well scattered.

Example 10. Piece 1x6-16. This is a Norway strip full of pitch and flat-grained, free from other defects and but for grain would go into "C" and better.

Example 11. Piece 1x6-16. Has twenty-one small, sound knots, the two largest being about one inch in diameter. On the back and at the center of the piece slight wane shows on both edges for thirteen inches, but not enough to impair the tongue or groove.

No. 2 FENCING D AND M.

This should be simply No. 2 Fencing worked to flooring, and of the character, when worked, described under the title of No. 2 Common Strips.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-14. Has eight black knots, three are one-half inch in diameter within three feet of one end and one of them is an edge knot, the other five knots are one and one-half inches in diameter, scattered over the face of the piece. At the opposite end from the large knots is a one-half inch hole where a knot has sloughed off in working.

Example 2. Piece 1x6-14. Has seven small, black knots that would readily be admitted as a No. 1 strip if one of the edge knots had not come out in working.

Example 3. Piece 1x6-12. Has white sap full length of piece on one edge. One end has a streak of pitch averaging three-fourths inch for five feet, at opposite end, an open pitch streak for two feet, and three one-inch knots.

Example 4. Piece 1x6-14. Has four black knots from one to one and three-fourths inches in diameter, two pitch knots one and one-half inches wide by four inches long, and seven knots one and one-half inches and smaller. All are well scattered over the face.

Example 5. Piece 1x6-16. At one end has one and one-half inch sound, red knot and one one-half inch red knot. The center has two one-inch sound red knots and part of a one and one-half inch loose knot on grooved edge. Scattered over the face within six feet of other end are ten sound pin knots and three two-inch sound red knots.

Example 6. Piece 1x6-16. Has twenty-two black knots scattered over face, three being loose and on one edge a little light shake. None of these knots will exceed one inch in diameter.

Example 7. Piece 1x6-16. This is a smooth looking strip, its principal defect being a light shell shake extending over two-thirds of the face; also five small knots well scattered and a half inch edge knot-hole.

Example 8. Piece 1x6-16. This is a sound small knotted piece and would be No. 1 if it were not that a knot one inch by one-half inch is gone out of the edge.

Example 9. Piece 1x6-16. Is coarse in appearance on account of two large limb knots extending across the face. Knots are red.

Example 10. Piece 1x6-16. Contains nine knots from one-half inch to one inch in diameter, part of them black and one edge knot partly broken out in dressing. On one edge is a slight trace of rot, but the piece is of a very sound character.

Example 11. Piece 1x6-16. Has sound red knots of all sizes up to two inches and has one inch of black sap for six inches on one edge. This is considered a fine type of No. 2.

Example 12. Piece 1x6-16. At first appearance looks like a "D" Flooring strip, the apparent defect being a half dozen small knots averaging less than an inch. On close inspection considerable shake is found, rather more than is admissible in No. 1.

Example 13. Piece 1x6-16. Has too much blue stain to be admitted into either the grade of "D" or Shaky Clear Flooring, the entire face being covered, but on account of its otherwise good appearance is graded No. 2.

No. 3 FENCING D AND M.

No. 3 Fencing D and M is the regular grade of No. 3 Fencing worked to flooring and may contain coarse knots, an occasional knot-hole, splits, wane, worm-holes, streaks of red rot, and a great deal of shake, but not a serious combination of these defects.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-14. Has black knots five-eighths to one inch in diameter, three feet from end, knot sloughed off edge one-half to five-eighths inches. Five inches from same end and on same edge knot five-eighths by one and one-fourth inches sloughed off.

Example 2. Piece 1x6-16. If free from shake this piece would make a good No. 1 Fencing Flooring, but has open shake clear across the face for one-half length of piece.

Example 3. Piece 1x6-16. Has ten branch knots across its face, average size one and one-fourth by two and seven-eighths inches, at intervals of say eighteen inches, running the full length of piece; and also has sound red rot two inches wide in center of board running two feet, at one end of piece.

Example 4. Piece 1x6-14. Has eight small rotten knots with sound rot stains extending from one knot to the other along the whole length of the piece. This piece has a decidedly unsound appearance at the first glance.

Example 5. Piece 1x6-16. Has four good-sized branch knots on face, with some heart shake along the grooved edge; also three-fourths inch wane for two feet at one end of face. The back is also waney on both edges, so much so for half the length that the piece is almost slabby.

COMMON LUMBER.

Common lumber may consist of white or Norway pine, or a mixture of both.

The characteristics of Common lumber, as distinguished from Finishing, consist of a general coarseness of appearance, caused by various defects and combinations of defects, in a greater or less degree according to the grade.

No. 1 COMMON BOARDS AND STRIPS.

No. 1 Common Boards and Strips includes all sound, tight-knotted stock, whether red or black knots, free from very large, coarse knots or any imperfections that will weaken the piece.

This grade should be of a character fitting it for ordinary use except finishing purposes.

Knots, and a small amount of stained sap or a small amount of shake are admissible if they do not affect the general utility of the piece.

Norway boards and strips, except clear and select, should not be put higher than No. 1 Common. The class of Norway admissible in this grade can contain either black or red knots, provided they are small and firmly set and that the piece has a bright appearance.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x12-16. Has four red knots from one and one-half to two inches in diameter and one black knot one and one-half by three inches; also fourteen small knots, all sound and well scattered, these smaller knots varying in size from one-half to one and one-fourth inches.

Example 2. Piece 1x12-16. There are a great many knots in this piece, but they are well distributed, and are sound. Six of them are red, from one and one-half to two inches in diameter. Seven more red knots, about one and one-half inches, and four small black knots not over an inch in diameter.

Example 3. Piece 1x12-14. Has the knot defects and general appearance of a "D" stock. It contains a dozen small sound black knots, and quite a little close shake at one end and an inch of blue sap on one edge, for nearly the full length of the piece. Without the shake it would pass easily for a "D" stock.

Example 4. Piece 1x8-16. Very smooth looking piece, but has six black knots, all sound, from one-half to one and one-half inches in diameter, and a slight touch of blue sap on edge.

Example 5. Piece 1x8-16. Worked to drop siding. Has four red knots about one and one-fourth inches in diameter, and eleven small sound red knots, in size from one-half to one inch in diameter.

Example 6. Piece 1x8-16. Worked to shiplap. Has a great deal of sap, a portion of which is slightly stained, and in addition seven red knots about an inch in diameter, and fifteen smaller ones ranging from one-fourth to one inch in diameter. This has a smooth appearance for No. 1.

No. 2 COMMON BOARDS AND STRIPS

No. 2 Boards and Strips are subject to the same general inspection as No. 1, except that coarser and larger knots, not necessarily sound, more stained sap and shake are allowed. "V" and coarse limb knots, heart shake or slight trace of rot, when firm or occasional worm-holes, are defects admissible in this grade.

Norway, with medium colored blue stain covering the entire face of the piece, or darker stain covering a proportionately less surface, is admissible when not in combination with other marked defects.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x12-16. Has seven black knots from one and one-half to two inches in diameter and eight smaller knots, part of which are red, and the others black; also shake at one end.

Example 2. Piece 1x12-16. Very smooth in appearance. Looks like a "D" stock; Contains a number of small knots, but a great deal of close shake over the face of one-half of the board.

Example 3. Piece 1x12-16. Has six large branches or "V"-shaped knots, all red, from one and one-fourth to one and one-half inches wide, and from three to four inches long; also a half-dozen smaller red knots from one to two inches in diameter.

Example 4. Piece 1x16-16. Has four large branch knots all black, a little heart shake, or season check, a touch of red stain two inches wide at narrowest place, widening to five inches, in all about four feet in length; also eight or ten small knots well scattered.

Example 5. Piece 1x10-14. Has nine knots both red and black from one and one-half to two inches in diameter; at least a dozen smaller knots from one-half to one and one-fourth inches, both red and black, all well scattered and firmly set.

Example 6. Piece 1x12-14. Contains ten red knots from two to three inches in diameter, and a half dozen smaller ones, all sound; also a single grub or worm hole.

Example 7. Piece 1x6-16. Has a great deal of blue sap, with a dozen small knots, both red and black, well scattered and sound.

Example 8. Piece 1x6-16. Has two red knots two inches in size; four knots averaging an inch, and a half-dozen small ones. Type of a good No. 2.

Example 9. Piece 1x6-16. Has a streak of very firm red rot, from one-half to one inch wide, running six feet in length from one end. Also a half dozen small knots, well scattered. The rot is barely perceptible in the rough strip, and it has therefore a smoother appearance than the average No. 2 Fencing strip.

Example 10. Piece 1x6-16. Has three large worm-holes and considerable shake, both well scattered. In appearance very smooth, and an acceptable grade, whether used rough or D & M.

Example 11. Piece 1x12-14. The face contains a large number of sound knots, and would be No. 1 were it not that it also has six white worm or grub holes, well scattered. If it were ten inches wide, not more than three or four worm holes would be admitted.

No. 3 COMMON BOARDS AND STRIPS.

The general appearance of this grade of lumber is coarse, admitting:

Large, loose or unsound knots.

An occasional knot-hole.

A great deal of shake.

Some red rot.

Large worm-holes.

Any amount of blue sap.

Not a serious combination of these defects in any one piece is admissible.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x18-16. Badly split at one end for six feet, and sprinkled with a dozen knots.

Example 2. Piece 1x16-14. Very shaky all over, so much that shake can be plainly seen. No other defect.

Example 3. Piece 1x14-14. Has twelve large knots from two to three inches in diameter, some of them soft and unsound. Also a half dozen small knots and a split two feet in length at one end.

Example 4. Piece 1x12-16. Has six large branch knots, very coarse in appearance and which materially weaken the board. Otherwise sound.

Example 5. Piece 1x10-14. Worked to shiplap. Has four black knots about one and one-half inches in size and one knot hole of same size.

Example 6. Piece 1x10-14. Has eight small knots one inch in diameter. The knots are soft and rotten. If knots were sound, the board would pass for a "D" stock.

Example 7. Piece 1x10-14. Worked to shiplap. Has four sound knots one and a half inches in diameter, and one unsightly, coarse, black knot, two inches wide and six inches long.

Example 8. Piece 1x10-16. Worked to shiplap. One end smooth and free from all defects except a few pin knots. The other end shows three feet containing red rot four to six inches in width.

Example 9. Piece 1x8-16. Worked to flooring. Shows a dozen small, black knots, and red rot, of a firm texture, over one-third of its face.

Example 10. Piece 1x10-16. Worked to shiplap. Has knot defects as are found in No. 1 Common, but also has a dozen large worm-holes, well scattered, which make it a No. 3.

Example 11. Piece 1x10-14. Worked to shiplap. Has four large, black knots, three inches in diameter, one of them rotten; also a few pin knots and a little blue sap.

Example 12. Piece 1x10-16. Full of coarse knots, all sound, but so extremely coarse in appearance that the board is classed as No. 3. Without two or three of the coarse knots it would be a satisfactory No. 2.

Example 13. Piece 1x8-12. Worked to shiplap. Shaky all over but smooth in appearance.

Example 14. Piece 1x6-16. Has one inch of wane on one edge and considerable blue sap. Also one small knot hole an inch in diameter, and one large coarse knot.

Example 15. Piece 1x6-16. Has streak of firm rot four feet long, from one to three inches wide; also some shake at other end.

Example 16. Piece 1x6-16. Has three coarse black knots from two to three inches in diameter.

Example 17. Piece 1x10-14. Has one large sound knot two and one-half inches in diameter at one end of piece. Two feet from same end has rotten knot three-fourths inch in diameter and five feet from same end has dead sap two and one-fourth inches wide on each edge for four feet; also two good-sized worm holes, one knot hole, three-fourths by one inch, and six feet from end one sound red knot one and one-half inches in diameter.

Example 18. Piece 1x12-16. A nice, smooth-looking board with the exception of a rotten limb-knot one-half by two inches six feet from the end and fourteen worm holes well scattered from end to end. Outside of above defects this piece would be a good No. 1 twelve-inch stock board.

Example 19. Piece 1x16-14. Four feet from end of this piece is a bunch of five large sound knots in size from one and one-half to three inches in diameter, and running along piece are six other sound knots ranging in size from one-half to one and one-fourth inches in diameter. Within four feet of the other end of piece there is a knot-hole one and one-half inches in diameter, and an open gum seam about sixteen inches long.

Example 20. Piece 1x8-14. Has several small black knots one-fourth to five-eighths inch in diameter and three sound red knots from one and one-half to two inches in diameter. It also has two knot-holes on same edge of board, one of them one and one-fourth by one and one-half inches in size and six feet from end of piece, the other three-fourths by two inches and situated three feet from same end.

No. 4 BOARDS AND STRIPS.

The predominating defect characterizing this grade is red rot.

Other types are pieces showing numerous large worm-holes, or several knot-holes, or pieces that are extremely coarse knotted, waney, shaky or badly split.

Norway, when extremely cross-checked, is admissible in this grade only.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x18-16. One-half of this board has the general appearance of a No. 2 Common. The other half is composed of red rot, varying from firm to soft.

Example 2. Piece 1x12-16. Alternate streaks of white wood and red rot, fully one-half of the face being red.

Example 3. Piece 1x12-16. Contains a dozen large worm-holes, considerable rot and a few coarse knots.

Example 4. Piece 1x12-14. Contains four large knot-holes with other knot defects.

Example 5. Piece 1x12-16. Has the knot defect of a No. 2 board, but contains also twenty-five or thirty large worm-holes. No rot or knot-holes.

Example 6. Piece 1x12-12. Very badly split in two or three places. No rot or knot defects to speak of, but board is badly shattered.

Example 7. Piece 1x10-16. Three-fourths of the face of this board shows red rot, but very little soft rot.

Example 8. Piece 1x4-16. Shows a good face, but it is excessively waney on back, there being four feet of it showing all slab. Face equal to No. 2 in quality.

No. 5 BOARDS.

No. 5 Boards is the lowest recognized grade and admits of all defects known in lumber, provided the piece is strong enough to hold together when carefully handled.

JOISTS, SCANTLING AND TIMBER.

No. 1.

No. 1 joists and scantling must be of a good, sound character, but will admit of defects that do not impair the strength of the piece.

On basis of 2x4, wane on edge is admissible, $\frac{1}{2}$ inch deep, for half the length, or a proportionate amount for a shorter distance or on both edges. In any case, one side and two edges should allow a good nailing surface. It being understood, however, that the wane shall in no case extend over one-half the side of the piece.

A few worm holes admissible.

Stained sap is not considered a defect.

Timbers and 3-inch plank admit proportionately greater defects.

No. 2.

No. 2 will admit of large, coarse knots, not necessarily sound, considerable wane, also shake, worm-holes, red, dozy streaks, crooked pieces or other defects which weaken or impair the piece to such an extent as to render it unfit for No. 1 grade.

No. 3.

No. 3 will admit a great deal of rot and all the imperfections allowed in No. 1 and No. 2, but in a much more pronounced form.

THICK COMMON LUMBER.

GENERAL RULE.

Common lumber, one and one-fourth inches and thicker, shall be graded the same as inch lumber.

TANK STOCK.

Tank Stock shall be of dimension sizes, square edged, practically free from wane and shake, and having any quantity of sound, water-tight knots.

White sap is no defect.

SELECT COMMON.

Select Common shall be of dimension sizes, of White Pine, and of a smooth, common appearance on the face side.

White sap shall not be considered a defect in this grade.

A slight amount of stain is admissible on the face, and any amount of sound, stained sap on the back.

A small amount of shake may show on the face when not in combination with other marked defects.

Any quantity of small sound knots, red or black, that do not give too coarse an appearance to the piece, are admissible.

The face of piece should be practically free from wane, while the back may show a moderate amount, as well as other defects.

STEP PLANK.

Step Plank shall be white pine, 8 inches or wider, and shall grade the same as No. 1 Common Boards.

FLAT COMMON.

Flat Common shall be white pine, 6 inches or wider, and shall be graded the same as No. 2 Common Boards and Strips.

No. 1 BOX.

No. 1 Box shall be graded the same as No. 3 Common Boards and Strips.

No. 2 BOX.

No. 2 Box shall be graded the same as No. 4 Common Boards and Strips.

Rules for the Grading of Factory Lumber.—Prepared by the Bureau of Grades.**FACTORY PLANK.**

Grades as described under this head are valued for cutting up qualities only, and should not be confounded, either in quality or value, with grades outlined in another part of this book for yard purposes.

Factory plank of all kinds, better than No. 3 Shop, shall be graded for the percentage of Door cuttings that can be obtained.

Two grades of Door cuttings only shall be recognized, and are to be known as No. 1 and No. 2 cuttings.

The only defect admissible in No. 1 Cuttings is white sap.

The grade of No. 1 Door cuttings must be free from all other defects.

The grade of No. 2 Door cuttings will admit of one defect only in any one piece. This may be a small knot of sound character, not to exceed five-eighths of an inch in diameter, or the defect may be slightly stained sap which does not extend over more than one-half the face of the piece on one side.

SHOP COMMON.

No. 1 Shop Common.—The sizes and grades of cuttings admissible in the grade of No. 1 Shop Common are as follows:

No. 1 Stiles in width $5\frac{1}{4}$ or 6 inches, and in length from 6 feet 8 inches to 7 feet 6 inches.

No. 1 Rails, 9 or 10 inches wide and from 2 feet 4 inches to 3 feet in length.

No. 1 Muntins $5\frac{1}{4}$ inches wide and from 3 feet 6 inches to 4 feet in length.

Any number of pieces of either the Stiles or Rails mentioned above are admissible in the grade of No. 1 Shop Common; but only two Muntins of the sizes mentioned above shall be considered, and one No. 2 Door Stile may also be considered, in securing the required percentage of cuttings in any given plank.

Each plank of No. 1 Shop Common shall contain not less than 50 per cent. nor more than 70 per cent. of Door cuttings of the sizes and grades above mentioned.

No. 2 Shop Common.—The sizes admissible in No. 2 Shop Common are as follows:

Stiles in width $5\frac{1}{4}$ inches or 6 inches and from 6 feet 8 inches wide to 7 feet 6 inches in length.

Rails 9 or 10 inches in width and from 2 feet 4 inches to 3 feet in length.

Top Rails $5\frac{1}{4}$ inches wide and from 2 feet 4 inches to 3 feet in length. Top Rails must, however, be of No. 1 Door cutting quality.

Muntins $5\frac{1}{4}$ inches wide and from 3 feet 6 inches to 4 feet in length.

Any number of cuttings of any one of the above sizes are admissible in the grade of No. 2 Shop Common.

Each plank of No. 2 Shop Common shall contain either one of the following: At least 25 per cent. of No. 1 Door cuttings, or not less than 40 per cent. of all No. 2 Door cuttings, or not less than $33\frac{1}{3}$ per cent. of No. 1 and No. 2 Door cuttings combined.

No. 3 Shop Common one and one-fourth inches and thicker, will admit all below the grade described as No. 2 Shop Common that is of a cutting type, and suitable for sash, door or other cuttings, and may contain not to exceed 25 per cent. of Step Plank and Flat Common.

FACTORY SELECTS.

Factory C Select.—The grade of Factory C Select shall contain from 70 to 80 per cent. of No. 1 Door cuttings in the sizes specified as admissible in No. 1 Shop.

Factory B Select.—The grade of Factory B Select shall contain from 80 to 90 per cent. of No. 1 Door cuttings in the sizes specified as admissible in No. 1 Shop.

Factory A Select and Better.—The grade of Factory A Select and Better shall consist of all Plank, cutting more than 90 per cent. of No. 1 Door cuttings of the sizes specified as admissible in No. 1 Shop Common.

Note.—All factory plank shall be graded from the poor side, and in determining the percentages of door cutting, consideration must be given to the fact that plank are to be ripped full length in such manner as will yield the highest grade and largest percentage of door cuttings before cross cutting, except in such cases where plank will yield a higher value by being first cross cut for rails. In such instances as when stock is cross cut for rails, and where some of the stock so obtained is too poor for either No. 1 or No. 2 rails, and which yet contain stiles or muntins, or top rails, which can be obtained by ripping this cross cut stock, the door cuttings so obtained shall be figured in, when determining percentages.

INCH SHOP COMMON.

There shall be only one grade of Inch Shop Common.

Cuttings shall be $9\frac{1}{2}$ inches wide or wider, and 18 inches long or longer; or, 5 inches wide or wider and 3 feet long or longer.

Cuttings 9½ inches wide or wider, and less than 3 feet long shall be free from defects on both sides, except white sap.

Cuttings 5 inches wide or wider, and 3 feet long or longer, shall have a C Select or Better, face.

Each piece of Inch Shop Common shall contain 50% or more of any one cutting, or combination of cuttings, described in the foregoing rules for this grade.

RULE FOR MEASUREMENT OF FACTORY PLANK.

Factory Plank may be measured with either a rule or a tape line.

When a rule is used, the number of feet nearest the actual measurement shall be taken.

The additional thickness over inch, shall be added to the surface measurement of the total amount measured.

DOOR CUTTINGS.

The figures on the left of the brackets show the number of feet and decimal parts in each cutting.

The figures on the right show the number of feet and approximate fractions of a foot in each piece of cutting grouped within the various brackets. These fractional figures on the right of the brackets are sufficiently accurate for practical purposes and are to be used in computing the percentage of cuttings in a factory plank.

STILES.			RAILS.		
5 $\frac{1}{4}$ " x 6' 8" — 2.92 ft.	}	3	9" x 2' 4" — 1.75 ft.	}	1 $\frac{3}{4}$
5 $\frac{1}{4}$ " x 6' 10" — 2.99 ft.			9" x 2' 6" — 1.875 ft.		
5 $\frac{1}{4}$ " x 7' — 3.06 ft.			9" x 2' 8" — 2. ft.	}	2
5 $\frac{1}{4}$ " x 7' 2" — 3.14 ft.	}	3 $\frac{1}{4}$	9" x 2' 10" — 2.125 ft.		
5 $\frac{1}{4}$ " x 7' 4" — 3.21 ft.			9" x 3' — 2.25 ft.	}	2 $\frac{1}{4}$
5 $\frac{1}{4}$ " x 7' 6" — 3.28 ft.			10" x 2' 4" — 1.94 ft.		
6" x 6' 8" — 3.33 ft.	}	3 $\frac{1}{2}$	10" x 2' 6" — 2.08 ft.	}	2
6" x 6' 10" — 3.42 ft.			10" x 2' 8" — 2.22 ft.		
6" x 7' — 3.5 ft.			10" x 2' 10" — 2.36 ft.	}	2 $\frac{1}{4}$
6" x 7' 2" — 3.56 ft.	}	3 $\frac{3}{4}$	10" x 3' — 2.5 ft.		
6" x 7' 4" — 3.66 ft.					
6" x 7' 6" — 3.75 ft.					
MUNTINS.			TOP RAILS.		
5 $\frac{1}{4}$ " x 3' 6" — 1.53 ft.	}	1 $\frac{1}{2}$	5 $\frac{1}{4}$ " x 2' 4" — 1.02 ft.	}	1
5 $\frac{1}{4}$ " x 3' 8" — 1.6 ft.			5 $\frac{1}{4}$ " x 2' 6" — 1.09 ft.		
5 $\frac{1}{4}$ " x 3' 10" — 1.68 ft.	}	1 $\frac{3}{4}$	5 $\frac{1}{4}$ " x 2' 8" — 1.17 ft.	}	1 $\frac{1}{4}$
5 $\frac{1}{4}$ " x 4' — 1.75 ft.			5 $\frac{1}{4}$ " x 2' 10" — 1.24 ft.		
			5 $\frac{1}{4}$ " x 3' — 1.31 ft.		

Association Standard Grades.—Rules for the Grading of Hemlock Lumber.

Adopted at Stevens Point, Wisconsin, July 7, 1897, by the Northwestern Hemlock Manufacturers' Association.

GENERAL INSTRUCTIONS.

The utility of Hemlock as a wood, suitable where common lumber is used for building purposes, has established its popularity with the consumers of lumber wherever its merits are known. The character of the wood is such that there are but few grades made. More or less shake is found in all grades. The grades are made almost entirely from the standpoint of strength and appearance.

WATER STAIN.

In hemlock will often be found streaks or patches of red or brown discoloration, sound and firm, the presence of which does not weaken the wood, nor detract seriously from its utility. Water stain should not be confused with rot, being firm and strong, while rot is soft and decayed wood.

Boards and strips when worked to flooring, shiplap, or drop siding, should retain the same features when worked as described under the various grades of common, sheathing or cull.

PIECE STUFF OR DIMENSION.

No. 1 DIMENSION.

The grade of No. 1 Dimension will admit of shake that will not materially affect the strength of the piece.

Also knots either black or red, that are well located and fairly sound.

Or a knot hole that will not impair its strength.

Or some slight cross checks, or sound water stain.

This grade while admitting the above defects must at the same time retain the element of strength required for any ordinary building purposes.

The grade includes not only stock showing the above defects, but all of the better quality that may be found in the log.

EXAMPLES.

Example 1. Piece 2x4-12. No. 1. Shows heart shake along one edge for half length and one foot of same on other side of same face; two sound branch knots, three-fourths inch wide.

Example 2. Piece 2x4-12. No. 1. Shows shake running along one face with grain for nearly its entire length; does not show on other face and therefore strong enough for building purposes.

Example 3. Piece 2x4-16. No. 1. With exception of extensive stain on one side and five very small, round knots, the piece is perfect.

Example 4. Piece 2x4-16. No. 1. One side is perfect. On the other, six worm-holes, and somewhat checked, but does not affect the strength of piece.

Example 5. Piece 2x4-16. No. 1. Has six sound, black knots, well scattered; one is two inches in diameter; two are one and one-half inches in diameter and balance are less than one inch. While the knots are black, they are firm, well set and piece considered sound.

Example 6. Piece 2x8-16. No. 1. Shows five one-inch black knots, and two one and one-half inch red knots, all running through the piece and well scattered. On one edge for four feet, at one end is wane one-half inch by three-fourths inch deep.

Example 7. Piece 2x8-12. No. 1. Shows a streak of red stain half its length on one side only. Two sound red knots two inches in diameter, four feet apart, and one and one-half inch knot sloughed off one edge.

Example 8. Piece 2x8-14. No. 1. Shows a straight split for two feet at one end and at other end, shake for three feet on one side only; otherwise sound.

Example 9. Piece 2x8-16. No. 1. Is perfect in every particular and in white pine would be considered a select.

Example 10. Piece 2x8-14. No. 1. Has one and one-half inch round knot hole across one edge one foot from end, also one two-inch and three one and one-quarter inch sound, red knots, well scattered. No other defects.

Example 11. Piece 2x8-16. No. 1. Shows heart shake and numerous small sound red knots for entire length of one side; otherwise perfect.

Example 12. Piece 2x12-12. No. 1. Shows shell shake four inches by three feet on one side, a straight split on one end one foot long; one three-quarter inch unsound knot and two black knots one inch in diameter.

Example 13. Piece 2x12-14. No. 1. At four feet from one end has one and three-quarter inch knot hole on one edge, and on opposite edge three feet of tight shake; otherwise perfect.

Example 14. Piece 2x12-14. No. 1. Shows considerable tight shake for six inches over two-thirds its face; also one black horn knot one-half by three-quarters inch near center. Shake does not go through and piece has strength to carry it.

Example 15. Piece 2x12-16. No. 1. Has five black knots one and one-half inches in diameter and four one-half inch black knots. One of the largest knots unsound; also numerous checks six inches long, lengthwise of the piece. While it shows many defects, it is strong enough for any building purpose, but simply on appearance would be considered a line piece.

Example 16. Piece 2x12-16. No. 1. Shows shake over entire face for full length, very little of it going through; several small sound red knots.

Example 17. Piece 2x12-14. No. 1. Has a select appearance and nearly perfect. Shows no defects except a short straight check at one end.

No. 2 DIMENSION.

The grade of No. 2 in dimension includes stock not good enough to be classed as No. 1, and the defects admissible are of the same general character as the defects found in No. 1, except that they are more pronounced.

It is the lowest grade recommended for ordinary building purposes.

Considerable shake, large unsound knots, loose knots, knot-holes, and cross checks are all admissible in this grade, but not a serious combination of these defects in any one place.

This grade can be recommended for cheap construction in small buildings.

EXAMPLES.

Example 1. Piece 2x4-16. No. 2. Shows four feet of rot on both sides, but not so extensively as to materially weaken the piece. Otherwise sound.

Example 2. Piece 2x4-16. No. 2. Shows rot on one side for two and one-half feet and a large coarse branch knot that weakens it too much for No. 1.

Example 3. Piece 2x4-16. No. 2. Is a heart piece and shows shake along one edge nearly the entire length. At one end shake shatters it enough to weaken piece somewhat.

Example 4. Piece 2x4-16. No. 2. Shows wane across the piece three-quarters inch deep on one side for five feet.

Example 5. Piece 2x6-16. No. 2. Shows some shake for two feet at one end and one-half dozen small sound red knots scattered over the face, and streak of firm hard rot two to three inches wide running for three feet in length. This rot shows through on both sides and one edge.

Example 6. Piece 2x6-16. No. 2. Has ten coarse knots from one and one-half to two inches in diameter, well scattered. One knot-hole one and one-half inches in diameter on edge and shows shell shake over two-thirds of face.

Example 7. Piece 2x8-12. No. 2. Has a two and one-half inch knot-hole in center, four feet from end, and one face shows shell shake for four feet.

Example 8. Piece 2x8-12. No. 2. Has extensive shake five feet from one end and seven small sound black knots. If it were not for the character of the shake, which is crosswise of the piece, and weakens it, it would be considered a good No. 1.

Example 9. Piece 2x10-14. No. 2. Shows moderately tight shake for one-half its length and on one side three feet from end, wane, three inches wide, three-quarter inch deep extending for three feet. It is graded down strictly on account of appearance.

Example 10. Piece 2x12-16. No. 2. At one foot from end on one edge shows a hole one by three inches where knot is sloughed off, one side. At center two knot-holes one foot apart, and one and one-half inches in diameter. There are also five small sound red knots and two feet of shake.

CULL PIECE STUFF.

This grade can not be recommended for ordinary construction.

The defects are very excessive shake, or badly shattered stock, numerous knot holes, very large, coarse, rotten knots, or considerable rot.

EXAMPLES.

Example 1. Piece 2x4-12. No. 3. Has four very coarse knots and one and one-half inch knot-hole and considerable rot at one end. There is no strength to the piece.

Example 2. Piece 2x6-16. No. 3. Has three two-inch rotten knots with holes part way through from one face; on the other side considerable soft rot for half the length of the piece.

Example 3. Piece 2x6-16. No. 3. Has a straight split at one end for six feet. The remainder of the piece is badly shattered with shake.

Example 4. Piece 2x6-14. No. 3. Within four feet of one end has a knot-hole so large as to leave only three inches of lumber. Is extremely shaky and otherwise weakened by defects.

Example 5. Piece 2x6-12. No. 3. Has a combination of coarse knots, and open shake to such an extent as to weaken it for anything but temporary building purposes.

Example 6. Piece 2x8-16. No. 3. Contains soft rot over one face for six feet and is extremely shaky.

Example 7. Piece 2x12-16. No. 3. Shows open shake for one-half its face for full length and balance of the piece shows extensive water stain.

Example 8. Piece 2x12-16. No. 3. Shows a dozen large, coarse knots, a great deal of shake and extensive rot three to six inches wide running through the piece.

BOARDS AND STRIPS.

There are three grades made in boards and strips.

No. 1, or common.

No. 2, or sheathing.

No. 3, or cull.

No. 1 OR COMMON.

The grade of No. 1 or common in boards or strips includes stock of a generally sound character.

Some shake is admissible.

Numerous knots, whether red or black.

An occasional knot-hole in a smooth appearing piece, or in a wide, smooth piece two or three small holes.

Some water stain of a firm character.

In this grade some pieces may be found practically free from defects.

EXAMPLES.

Example 1. Piece 1x6-16. No. 1 D. & M. Shows a half-inch knot-hole three feet from end, also two half-inch edge knots sloughed off, but not leaving holes. There are twelve other knots one inch and less in diameter, two having unsound centers. With these defects it still retains a good appearance.

Example 2. Piece 1x6-16. No. 1. D. & M. Shows considerable shell shake for three feet at one end; at other end machine has gouged out a piece one-half inch deep and two inches in diameter. There are also two one-half inch black knots near center.

Example 3. Piece 1x8-14. No. 1, S. 1 S. Has four sound red knots averaging one and one-half inches in diameter; six sound red knots under one inch in diameter, all well scattered; one unsound black knot one inch in diameter, one foot from end, and three feet from same end a knot-hole one inch in diameter. With the exception of this end, the piece has a very sound, smooth appearance. No shake.

Example 4. Piece 1x8-12. No. 1 shiplap. There are nine sound red knots one and one-quarter inches and less in diameter, scattered over the face. Machine has gouged a hole three-quarters by one and one-half inch on one edge near end and a small amount of shake appears near end.

Example 5. Piece 1x8-12. No. 1, S. 1 S. Has six black knots three-quarters to one inch in diameter and three three-eighths-inch black knots, also two feet of shake at one end.

Example 6. Piece 1x10-14. No. 1, S. 1 S. The only defects are four slight season checks. It has a select appearance.

Example 7. Piece 1x8-12. No. 1, shiplap. Shows a two and one-half-inch sound red knot at one end, at center a one-half inch knot hole. Directly opposite this knot-hole the machine tore out on edge a piece one-half inch deep by two inches long, and within four feet from other end are three black knots, one being one inch in diameter and two three-quarter inches in diameter; also shows three short season checks.

Example 8. Piece 1x10-16. No. 1, shiplap. Is peppered with red and black knots one and one-half inches and less in diameter over the entire face. One three-quarter-inch knot is unsound, two inches deep along one edge for eight feet is tight shake and the opposite edge shows nearly as much. Piece very smooth in appearance.

Example 9. Piece 1x10-16. No. 1, S. 1 S. A discoloration or water stain is shown over the face of this piece for four feet at one end and spots of stain over balance of face. Also local shake in two places. Piece has the general appearance of a select.

Example 10. Piece 1x10-16. No. 1. Shows heart shake for five feet along the center, four cross or horn knots one by three inches and three feet from end a thin spot one foot long that machine could not surface.

Example 11. Piece 1x10-16. No. 1, S. 1 S. Has six black knots three-quarters inch and less in diameter. One sound, red knot one and one-half inches in diameter, and a spot of hard rot two by eight inches that does not go through.

Example 12. Piece 1x12-16. No. 1, S. 1 S. Shows shell and heart shake in spots the entire length, but shake does not extend through the board. Also several horn knots that are small and sound. General appearance good.

Example 13. Piece 1x12-16. No. 1, S. 1 S. Shows numerous small red and black knots scattered over face. Two one-half-inch black knots have fallen out, but piece is so smooth in appearance it will stand the holes.

No. 2 OR SHEATHING.

Boards or strips will admit of considerable shake.

Black unsound knots.

Two or three good-sized knot holes or more of small ones.

Streaks or patches of discoloration, showing partial decay.

The grade can be safely recommended for ordinary sheathing or roof boards.

EXAMPLES.

Example 1. Piece 1x6-16. No. 2, D. & M. Has been badly torn by machine in four or five places; otherwise sound.

Example 2. Piece 1x6-12. No. 2, D. & M. Has one-inch edge knot hole near one end, two three-fourth-inch knot holes three feet from same end, and a three-fourth-inch loose knot twelve inches from hole, and at other end an inch loose black knot.

Example 3. Piece 1x8-16. No. 2, shiplap. Within four feet of one end shows two one-half-inch knot holes, also small piece broken out on edge by machine; at other end a three-fourth-inch knot hole. Balance of piece a sound, knotty appearance.

Example 4. Piece 1x8-14. No. 2, shiplap. Has shell shake for three feet at one end, two feet of shell shake at center, a one and one-half-inch knot hole four feet from other end and two one-half-inch black knots.

Example 5. Piece 1x8-16. No. 2, D. & M. For three feet at one end is an extensive shell or cross shake, also an inch hole on edge torn by machine. At center a two-inch loose, black knot; at the other end a one and one-fourth-inch unsound knot.

Example 6. Piece 1x8-14. No. 2, rough. Has three one-inch knot holes within eight feet; two black three-fourth-inch knots at center and two feet of shake at end.

Example 7. Piece 1x10-12. No. 2, shiplap. Has extensive shake half the width of piece the entire length. No other imperfections excepting a few sound, red knots.

Example 8. Piece 1x10-16. No. 2, S. 1 S. Shows extensive shake for four feet near center, several coarse, sound knots and stain over one-half of piece.

Example 9. Piece 1x10-14. No. 2, rough. Has a two and one-half-inch knot hole, two feet from end, and one and one-half-inch black knot alongside of it. At other end a two-inch unsound knot and a small amount of shell shake through center of board.

Example 10. Piece 1x12-16. No. 2, S. 1 S. Has a straight split two feet long at one end from which extend red streaks two inches wide by three feet long at center, a two-inch black unsound knot with four feet of very tight shake at other end.

Example 11. Piece 1x12-14. No. 2, rough. Within four feet from one end are eight black knots one inch and less in diameter. One one-inch knot hole; an open season check eighteen inches long. At other end shell shake for three feet and three three-fourth-inch black knots.

No. 3, OR CULL BOARDS AND STRIPS.

This is the lowest grade made in hemlock.

The defects may consist of very excessive shake.

Badly shattered stock. Very coarse, unsound knots.

A great deal of rot. Excessive cross checks.

EXAMPLES.

Example 1. Piece 1x8-16. No. 3. Has three three-inch knot holes within six feet from end. Three large, coarse knots and two black unsound knots.

Example 2. Piece 1x8-14. No. 3, rough. Has three large rotten knots, two inches and over in diameter; one edge knot hole and back of board is two-thirds slab.

Example 3. Piece 1x8-14. No. 3, rough. Is streaked with rotten sap. Is coarse knotted, badly checked and one-half inch of edge split off for three feet.

Example 4. Piece 1x10-16. No. 3. On one side shows extensive soft rot two-thirds its entire length and streaked with rot on other side.

Example 5. Piece 1x10-16. No. 3, rough. Contains all the defects known to hemlock, rot, shake, coarse knotted and yet can be used as a whole.

Example 6. Piece 1x12-14. No. 3, rough. Is badly shattered by shake from end to end. Also coarse knotted and streaked with rot.

Example 7. Piece 1x12-16. No. 3, rough. Is excessively cross checked.

MOBILE TIMBER, CLASSIFICATION

Adopted by the Export Bureau of Information, January 3, 1900.

Merchantable Sawn Timber.—Shall show heart on all four sides.

All timber shall be free from injurious defects, such as rot, red heart, rosin shakes, and injurious wind shakes extending to the surface; all corner defects to be classed as wane and treated as such. Other defects, such as worm holes, hollow and unsound knots and cat faces, to be left to the judgment of the inspector.

Eleven Inches and Under.— $1\frac{1}{2}$ inches wane in widest place, not to exceed one-third length of stick on one corner, or if no more than one corner one-third length in the aggregate.

From 12 to 14 Inches.— $2\frac{1}{2}$ inches of wane, not to exceed one-third length of stick on one corner, or if on more than one corner, one-third length in the aggregate.

Fifteen Inches and Up.— $3\frac{1}{2}$ inches of wane, not to exceed one-third length of stick on one corner, or if on more than one corner, one-third length in the aggregate.

All timber shall be sound and well manufactured, and square-buttcd with saw at both ends.

Sawn timber shall be measured on smallest dimension to full inches, length to be taken in full feet within pin holes.

Sawn timber shall be sold on a basis of a price per cubic foot of merchantable sawn timber for 40 feet cubic average rising or falling respectively one-half cent per cubic foot in every $2\frac{1}{2}$ feet of larger or smaller cubic average.

Wane that a $\frac{5}{8}$ -inch hook will catch not to be considered as wane.

STANDARD STOCK GRADES.

As Adopted by the National Slack Cooperage Manufacturers' Association.

STAVES.

Elm Staves 30 inches long shall be cut not less than five staves to 1 15-16 inches in thickness. Elm staves 24 to $28\frac{1}{2}$ inches long shall be cut not less than five staves to $1\frac{7}{8}$ inches in thickness, except 24-inch or keg staves, when especially cut, when said staves shall be cut six staves to 2 inches in thickness.

Cottonwood Staves of all lengths shall be not less than five staves to 2 inches in thickness.

No. 1 Staves shall be of full thickness and uniform throughout, free of knots, slanting shakes, dozy wood or other defects.

Meal-barrel Staves shall be free of slanting shakes over $1\frac{1}{2}$ inches long, knot holes, unsound knots (but sound knots of not over $\frac{3}{4}$ inches in diameter shall be allowed), free of thin staves, and shall consist of good, sound, workable staves.

No. 2 Staves shall be free from dead culls.

Mill-run Staves shall consist of the run of the knife, made from regular run of stave logs, dead culls thrown out.

SPECIAL STOCK.

White Ash Staves shall be cut five staves to $2\frac{1}{8}$ inches in thickness, graded the same as elm, but only No. 1 and No. 2 quality.

Mill-run Elm or hardwood apple-barrel staves shall be cut six staves to 2 inches in thickness, and shall consist of the run of the mill, from the regular run of stave logs, dead culls thrown out.

Mill-run Cottonwood apple-barrel staves shall be cut five staves to 2 inches in thickness.

All the above staves shall average in measurement 4 inches per stave or 4,000 inches per 1,000 staves across the bilge, with the exception of the keg staves, which shall measure 160 inches per bundle of fifty staves across the bilge, and 24-inch half-barrel staves, which when not otherwise specified shall measure $3\frac{1}{2}$ inches wide or 175 inches per bundle across the bilge. All other staves not specifically mentioned shall be sold according to the local custom or under special agreement.

HOOPS.

Sugar-barrel Hoops shall be 6 feet 4 inches, 6 feet 6 inches and 6 feet 9 inches long, cut so as to be not less than 5-16 inches and 3-16 inches in thickness when finished and seasoned, and not less than $1\frac{3}{8}$ inches wide when seasoned.

Flour-barrel Hoops shall be $5\frac{1}{2}$ feet and 6 feet long, and shall measure, when seasoned, not less than 5-16 inches to 3-16 inches in thickness, and not less than $1\frac{3}{8}$ inches wide.

Keg Hoops shall be sold on special specifications as agreed upon between the buyer and seller.

No. 1 Hoops shall be good, sound timber, fully up to the specifications, free from broken hoops in the coils and well finished.

HEADING.

No. 1. Basswood or Cottonwood Heading shall be made from good, sound timber, free of damaging defects, of such diameter as is required, well jointed, $\frac{1}{2}$ inch in thickness and thoroughly kiln-dried.

No. 1 Hardwood Heading shall be of the same specifications as above, but only 7-16 inches in thickness and thoroughly kiln-dried.

Mill-run Heading shall be the run of the mill, dead culls out, thickness and dryness same as No. 1.

No. 2 Heading shall be the heading thrown out of the No. 1, dead culls out. All staves, hoops and heading not specifically mentioned shall be bought and sold on terms and specifications agreed upon between the buyer and seller.

DEAD CULLS.

Are Staves containing knot holes of over $\frac{1}{2}$ -inch diameter.

Staves with large, coarse knots, or badly cross-grained near quarter that prevent staves being tressed in barrels.

Staves under $\frac{1}{4}$ inch thick.

Staves with bad slanting shake exceeding six inches in length, and with rot that impairs strength.

**Rules for the Classification and Inspection of North Carolina Pine, Revised
May 16, 1905.**

Adopted by North Carolina Pine Association (Inc.)

DEFINITIONS.

Narrow Edge—also called **Edge**—contains all widths under 12 inches except stock widths—6-inch, 8-inch, 10-inch and 12-inch.

Wide Edge contains all widths over 12 inches.

Knots.—Referred to as sound, rotten, loose, encased and tight, as to quality.

A loose knot is one that will come out.

An encased knot is one surrounded by bark or pitch.

A tight knot is one that will not come out.

A pin knot is a knot under $\frac{1}{2}$ -inch diameter.

The diameter of an oblong knot is the mean between its greater and lesser diameters.

A spike or horn knot is a knot sawed nearly or altogether lengthwise.

Pitch.—Pitch pockets are openings between the grain of the wood, and may contain pitch, or bark, or both.

A standard pitch pocket is not over $\frac{1}{2}$ -inch wide nor over 3 inches long (measured over all).

A small pitch pocket is one not over $\frac{3}{8}$ -inch wide nor over 2 inches long (measured over all).

Pitch streaks are simply accumulations of pitch at different portions of the board.

WIDTHS OF LUMBER.

Nos. 1 and 2, 4-4 edge, to be 3 inches wide and up.

Nos. 3 and 4, 4-4 edge, to be 4 inches wide and up.

Nos. 1 and 2, 5-4 edge, to be 4 inches wide and up.

Nos. 1 and 2, 6-4 edge, to be 5 inches wide and up.

Nos. 1 and 2, 8-4 and thicker edge, to be 6 inches wide and up.

ROUGH LUMBER.

All lumber shall be well manufactured and well dried.
The basis of inspection shall be the best or face side of each piece.

GRADES.

No. 1, No. 2, No. 3, Box, Mill Culls, Red Heart, Bark Strips.

No. 1.—No. 1 grade, under 12 inches wide, shall have one side clear of all defects except 5 per cent. pitch streaks, the other side to grade No. 2 or better. Lumber over 12 inches wide, in addition to the pitch streaks, may have one small pitch pocket or sound pin knot for every additional three inches of width.

No. 2.—No. 2 grade shall consist of boards with small tight knots on the best side and will permit 15 per cent. of pitch streaks, the other side to grade No. 3 or better; no knot in a board up to six inches wide to exceed one inch in diameter, and in boards above that width no knot to exceed one and one-half inches in diameter. The aggregate diameter of knots not to exceed one and one-quarter inches for every three inches in width of the board. Standard pitch pockets to be treated the same as knots.

No. 3.—No. 3 grade shall consist of tight knotted boards below the grade of No. 2, with clear edges on the face side. Stock boards shall have one edge clear one-fourth the width of the board on the face side; no knot in a board up to four inches wide to exceed one and one-half inches in diameter, up to six inches wide one and three-fourths inches, and above that width two inches; admitting black pin knots; pinney boards that would otherwise grade No. 1 or No. 2; No. 1 boards showing 50 per cent. pitch; No. 2 boards showing 25 per cent. pitch; the reverse side to grade equal to Box.

Box.—Box grade shall consist of coarse knotted boards and pinney and pitchy boards that would otherwise grade No. 2 or No. 3.

Mill Culls.—Mill Culls shall be all boards, excepting Red Heart, below the grade of Box, and shall be unsound, loose or rotten knotted, and otherwise defective boards, which can be used without a waste exceeding 25 per cent.

Red Heart.—This grade of lumber to be 66⅔ per cent. firm wood, so that it may be cut up with a waste of not exceeding 33⅓ per cent.

Bark Strips.—No. 1 and No. 2 Bark Strips shall show one-half inch of wood at the thinnest point, and shall grade equal to or better than No. 2 lumber.

Box Bark Strips shall contain all bark strips falling below the grade of Nos. 1 and 2.

STANDARD LENGTHS OF ROUGH LUMBER.

10, 12, 14 and 16 feet.

DRESSED LUMBER.

FLOORING, CEILING, PARTITION, FINISH, ETC.

All lumber shall be well manufactured and well dried.
The basis of inspection shall be the best or face side of each piece.

GRADES.

No. 1, No. 2, No. 3, No. 4.

No. 1.—This grade, up to 6-inch strip, shall have the face side practically clear of all defects, admitting 5 per cent. of pitch streaks; strips over six inches wide may have one sound pin knot or small pitch pocket for each two inches of width over six inches.

No. 2.—This grade shall admit small sound knots on the face side and 15 per cent. pitch streaks; the reverse side to grade No. 4 or better; no knot in a strip up to six inches wide to exceed one inch in diameter; wider strips may have knots one and one-half inches diameter. The aggregate diameter of knots or defects not to exceed one and one-half inches for every three inches of width of strip. Standard pitch pockets to be treated the same as knots.

No. 3.—This grade shall consist of knotty boards below the grade of No. 2; no knot to exceed in diameter one-half the width of the strip and no knot over two inches in diameter allowable in strips six inches and under; wider strips may have knots two and one-quarter inches in diameter; admitting small encased knots and small spike or horn knots and 30 to 40 per cent. of pitchy streaks, also pinney boards that would be otherwise classed as No. 1 or 2, and No. 1 and 2 boards showing 50 per cent. pitch. No limit as to quantity of knots in this grade.

No. 4.—This grade to consist of all lumber below the grade of No. 3, and that can be laid without wasting over 25 per cent. of any one piece.

Factory Flooring and Roofers shall grade the same as Box lumber. Unless otherwise specified, Roofers shall be worked, tongued and grooved.

WIDE AWAKE STEAM USERS

Want all that's coming to them from their engine. The PACKING used around the engine and pump rods governs the power you get to quite an extent. Good packing gives free motion without friction, and the rods give much longer service.



This Label on Packing

Is a guarantee of excellence and moderate prices

TEN—10—KINDS

EUREKA GUM CORE

EUREKA SPIRAL

EUREKA HIGH PRESSURE

EUREKA FLAX

EUREKA WATER-PROOF HYDRAULIC

EUREKA ROUND AND SQUARE TUCKS

EUREKA PACKING CO.

Sales Dept.

204 Fulton St., NEW YORK

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Swages, Mandrels, Files, Filing Machinery, Hammers, Rules, Emery Wheels, Shafting, Belting, Pulleys, Hangers.

The supplies that we carry in stock are the best that good money will buy for the purpose intended.

Good goods that carry the ear-marks of their adaptability with them.

PRICES AND DISCOUNTS

CHAMPION SAW CO.

BEAVER FALLS, PA.

STANDARD LENGTHS OF DRESSED LUMBER.

Flooring and Finish: 10, 12, 14 and 16 feet.
 Ceiling and Partition: 8, 10, 12, 14 and 16 feet.

DRESSING.

One-eighth inch shall be allowed to dress 4-4, 5-4, 6-4 and 8-4 lumber one side.
 Three-sixteenths inch shall be allowed to dress 4-4 and 5-4 lumber two sides.
 One-fourth inch shall be allowed to dress 6-4 and thicker lumber two sides.

MATCHING.

All flooring, ceiling and partition three-fourths inch thick and over shall be dressed two sides and center matched.

All ceiling under three-fourths inch thick shall be dressed one side and matched.

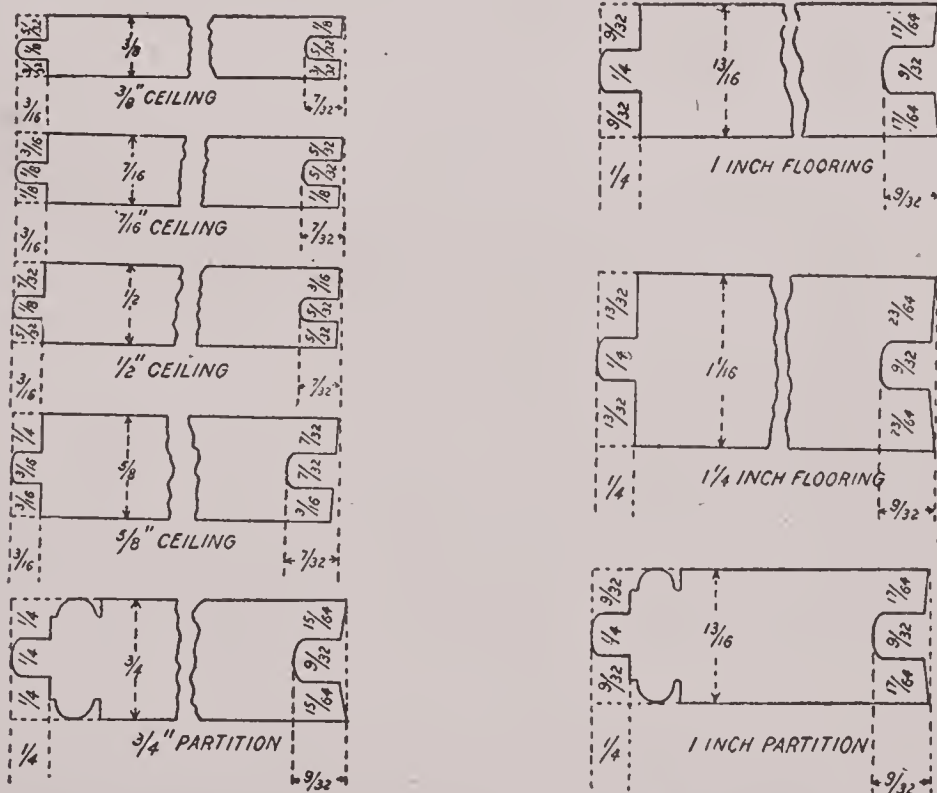
COUNT.

All lumber shall be counted by nominal or strip size, which is one-half inch wider than actual finished size in all regular patterns and standard matched flooring, ceiling and partition.

One-half inch in width shall be allowed for working moulded base and casing, except on standard patterns finished on the quarter-inch or three-quarter-inch, for which shall be allowed one-quarter inch.

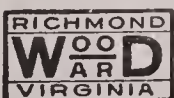
Standard Gauges.

The Standard Gauges adopted by this Association are as follows:



Established 1865
WOODWARD & SON YELLOW PINE

WHITE PINE, CYPRESS, POPLAR, MAHOGANY, AND ALL KINDS OF HARDWOODS
 FLOORING, CEILING, SIDING, LATHS, SHINGLES, POSTS



Yards Covering 8 Acres. Sheds with 7,000,000 ft. Capacity
General Offices 9th and Arch Sts., RICHMOND, VA.

shown, as in doors, sash, etc. With inch lumber, except shop common and partition, the uses are quite different, the almost invariable practice being that one face of the board is shown and that face the better one.

The face side of the lumber is the side showing the best quality or appearance.

Defects in lumber should be distributed in proportion to the size of the piece. Long or wide pieces of the same grade may contain more and greater defects than shorter or narrower pieces. The same percentage should be observed in both long and short, wide and narrow.

Wane in lumber is a defect which can not be described by rule with satisfaction, and therefore must be left to the judgment of the grader.

In a general way, D & M stock, except No. 3, should have a good bearing on back, and lumber S 1 S or S 2 S shows nearly a full face.

The lowering of grade on the face side on account of wane, should be governed by grade, width and defects in the piece.

Due consideration in rough stock should be given for the amount of wane that would be surfaced off in milling.

Lumber must be accepted on grade in the form in which it was shipped. Any subsequent change in manufacture or mill work will prohibit an inspection for the adjustment of claims, except with the consent of all parties interested.

Mixed width boards do not necessarily require as good edges as shiplap or dressed and matched stock of the same grade.

Planing mill work should be taken into consideration in all grades of dressed lumber, and its effect on a piece must be left largely to the judgment of the inspector.

Thick C Select, except for factory purposes, should be graded on its best side or face, not so much attention being given to the back; but in the grades of B Select and Better, the backs should, as a rule, be within one grade of the face.

The grade of partition shall be determined from its poorer side.

Lumber when worked shall be graded the same as the respective grades when in the rough.

Unless otherwise provided for, lumber worked two sides shall be graded from its better side or face; lumber worked one side shall be graded from its surface face.

The examples given in this book do not in all cases include all of the different types in any grade.

The interpretation of any grade is intended to cover all lumber between the next higher grade above, and the next grade below.

It is not contemplated by these rules to cover car siding and roofing, the grades of which should be determined by special agreement.

FINISHING.

CLEAR.

First Clear.—This should be twelve inches and over in width and free from all defects.

Second Clear.—This should be ten inches and over in width. When ten inches wide it should be free from all defects. A twelve-inch board must have a perfect face. A one-half inch of white sap on each edge, or one inch of sap on one edge of back is allowed. In the absence of sap one or two small pin knots not to exceed one-half inch in diameter are admissible. Pieces wider than twelve inches must have a perfect face, but can have sap or knot defects proportionally greater as the piece is wider.

Third Clear.—This should be eight inches and over in width. A piece eight inches wide should be free from all defects on both faces. In a ten-inch piece one or two small knots, not to exceed one-half inch in diameter, or in the absence of knots, white sap not to exceed one-half inch in width on each edge, or one inch in width on one edge is admissible. A piece from twelve inches to fourteen inches wide may have one inch of white sap on each edge of face or more sap on one edge. In the absence of sap or with less sap one or two small knots an inch in diameter are admissible. Wider stock can have more sap or slightly larger knots. The reverse side of Third Clear ten inches and wider, should not show poorer in quality than "A" Select face.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x14-16. Face side has a black knot on edge one and one-fourth by one inch, two feet from end, but not showing through. One small black knot one-half inch in diameter one foot from end, balance of face side clear. Reverse side shows one inch of white sap for six feet on one edge and about one foot slightly discolored sap.

Example 2. Piece 1x18-16. Face side shows two half-inch black knots and two small pin knots near one end, also a half-inch black knot near center. Reverse side shows practically the same defects except the knots are slightly larger.

Example 3. Piece 1x16-16. Shows an inch and a half of white sap for eight feet on one edge of the face side; no other defects. Reverse side shows three inches of white sap for twelve feet on one edge. No other defects.

Example 4. Piece 1x12-14. Face side shows one and one-half inches white sap on each edge for four feet at one end. One small knot one-half inch in diameter near other end. Reverse side shows three inches of white sap for twelve feet on one edge and two inches of white sap on other edge full length of the piece, and two small knots one-half inch in diameter.

Example 5. Piece 1x10-16. Has one clear face. Reverse side has one inch of slightly stained sap for two feet on one edge. Otherwise perfect.

Example 6. Piece 1x8-16. This piece is free from all defects on both sides.

"A" SELECT.

"A" Select should be eight inches and over in width. On the face side an eight-inch piece should be nearly perfect. An inch of white sap on one edge or one or two sound knots not to exceed one-half inch in diameter are admissible.

A ten-inch piece will admit of an inch and a half of white sap full length of one edge or less sap on both edges of face, with no other defect, or will admit of two or three knots, one-half inch in diameter if well scattered, or one or two knots not over an inch in diameter if well located.

Pieces fourteen inches and wider will admit of proportionately greater sap and knot defects as width increases, or very slightly local shake, or a straight split for six or eight inches, or one or two large worm holes near end or edge.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Shows one-half inch of white sap on one edge full length of the piece, and one small knot one-half inch in diameter.

Example 2. Piece 1x10-16. The face side has a quarter inch of slightly colored sap for one foot, otherwise perfect. Reverse side shows a little sap slightly blue on two edges.

Example 3. Piece 1x10-16. Is perfect on both sides, except a slight local shake in one spot.

Example 4. Piece 1x10-16. Very smooth in appearance with one knot three-quarters of an inch two feet from one end. Another smaller knot near other end, also one inch of white sap two feet in length at one end and one-half inch of sap on opposite edge of other end.

Example 5. Piece 1x12-16. On face side has one knot one and one-half inch in diameter and one pin knot, both going through the board; otherwise perfect.

Example 6. Piece 1x12-16. Has two three-fourth-inch knots that go through the board, and an inch of white sap on one edge full length of piece.

Example 7. Piece 1x14-16. Face side shows one small knot a half inch in diameter. A half inch of stained sap for two feet on one edge at center of board. Reverse side at center has two inches of stained sap on one edge for five feet and other edge has one inch of stained sap for four feet. This is considered a high type of "A" Select.

Example 8. Piece 1x16-16. Face side shows two black knots one inch in diameter near one end and three small pin knots. Reverse side shows two knots one inch in diameter at one end. On one edge three inches of white sap for ten feet. Other edge has two inches of slightly colored sap for eight feet.

Example 9. Piece 1½x16-16. One face has two inches of sap full length of one edge, discolored in streaks. Reverse side shows three-fourths inch wane for three inches, and three inches slightly colored sap full length of one edge.

Example 10. Piece 1½x19-16. Face shows a five-eighths inch black knot one foot from end. At same end on opposite corner a check eight inches long. At the other end is a slight shake for ten inches in center; also at the left from same end near edge, a pitch pocket one and one-fourth inches long. No sap on face. Reverse side shows one-fourth to three-fourths inch worm-eaten sap for eight feet on one edge, the small black knot at end shows through from face side.

"B" SELECT.

"B" Select should be eight inches and over in width.

In this grade white sap is not considered a defect unless too many other imperfections appear.

Knots, shake and a small amount of stained sap are admissible.

An eight-inch or ten-inch piece should have but very little shake. Wider pieces can have more shake, but it should be local and not scattered over the face of the piece.

Slightly stained sap is admissible when other defects are not of a serious nature, the amount of stained sap depending upon width of piece.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Has two inches of bright white sap the entire length of piece on one edge. The other edge has two inches of bright white sap for three-quarters its length. The balance of that edge is discolored sap. Other end of piece has one small knot.

Example 2. Piece 1x8-16. Three-quarters of the entire face shows white sap and a small knot at one end.

Example 3. Piece 1x10-16. Has one inch of stained sap for one-third the length of the piece. One small knot at each end and one five-eighths knot near center of board.

Example 4. Piece 1x10-16. Has local shake near one end and one and one-half inch bright sap on both edges with small knot at end.

Example 5. Piece 1x12-16. Has a small knot at each end, two and a half inches of slightly stained sap for four feet on one edge, and an inch and a half of white sap on the other end of opposite edge. The reverse side has three inches of stained sap on both edges for five feet at one end.

Example 6. Piece 1x12-12. Shows one and one-half inches white sap on one edge for half length of piece; other edge shows two inches of white sap two-thirds of length. Scattered over the face of this board are six small knots, varying in size from an inch to a small pin knot.

Example 7. Piece 1x12-16. Both edges of this board have sap varying in width from two to three inches and running full length of the piece, the sap showing slight discoloration. No knot defects or shake are shown.

Example 8. Piece 1x20-16. Has a rot stain three inches wide and eight inches long at one end, one three-quarter inch unsound knot at other end and two half-inch knots. The reverse side has same appearance, except a narrow streak of white sap and half-inch of stained sap for four feet.

Example 9. Piece 1x14-16. Has three half-inch black knots, one and one-half inches bright sap for eight feet on one edge and two and one-half inches of bright sap for four feet on other edge. The reverse side has three inches of bright sap on both edges for three feet and three-quarter inch of wane for three feet and shows same knots as on face.

Example 10. Piece 2x12-16. Has one poor knot three-quarter inch in diameter, but otherwise face is perfect. The reverse side shows stained sap on both edges three inches wide for four feet and one-half inch of wane for eight feet.

Example 11. Piece 2x14-16. At one end near the edge has one and one-half-inch knot; at the other end shake five inches wide for three feet on the same edge as knot. Reverse side shows three inches of slightly stained sap for eight feet.

Example 12. Piece 1x18-16. At one end shows shell shake for two feet running across one-half of the face. One edge shows three inches of slightly stained sap for eight feet. This piece also has three small knots not over one-half inch in diameter scattered over the face.

Example 13. Piece 1¼x14-16. Face side shows two inches of slightly colored sap at one end, running out at four feet, but no other imperfections. Reverse side shows sap over two-thirds of the piece, slightly colored in spots for six feet. No knots in this piece.

Example 14. Piece 1¼x16-16. Face side shows five black knots well scattered from one-half to one inch in diameter. Also three-fourths inch slightly stained sap at one end running out at six feet.

Example 15. Piece 1x12-16. The face shows two-thirds white sap, no other defects except that one edge shows fifteen inches wane on the back side one inch wide but not to a feather edge on the face side.

Example 16. Piece 1x10-16. Shows four inches white sap the entire length on one edge. No other defects except wane on the back for eighteen inches.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"C" SELECT.

"C" Select must be eight inches and over in width.

This grade will admit of quite serious defects if the piece retains at the same time a fair appearance.

The defects admissible are the same as those in "B" Select, but exist to a greater degree.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x8-16. Shows three inches of stained sap for two feet and three small knots. The reverse side has stained sap in four places.

Example 2. Piece 1x8-16. Has an inch and a half of white sap on each edge full length of piece and eight small knots well scattered.

Example 3. Piece 1x8-16. Shows three feet of tight shake on one edge at one end and one foot of open shake on the other end, otherwise of good appearance.

Example 4. Piece 1x10-16. Has white sap on the face side, no knots, but three feet of shake in center of board about three feet from one end. Board has a smooth appearance.

Example 5. Piece 1x10-16. Has five very small knots well scattered, a streak of stained sap on one edge and an inch of stained sap for two feet on the end of other edge.

Example 6. Piece 1x10-16. The face is free from defect except two and a half inches of stained sap for eight feet on one edge; otherwise very smooth in appearance. The reverse side shows quite an amount of stained sap.

Example 7. Piece 1x12-16. Has two inches of stained sap on each edge, two one-inch knots and two one-half inch knots. One-quarter of one side shows sap clear across, slightly stained.

Example 8. Piece 1x12-16. Has a very smooth appearance, but shows shake clear through for three feet at one end and four small knots.

Example 9. Piece 1x12-16. Shows considerable white sap on each edge, with eight small knots ranging from a pin knot to one inch in diameter.

Example 10. Piece 1x12-16. Quite smooth in appearance with shake four inches wide tapering off at one-third length of the piece. At other end of the piece shake running in "V" shape for eighteen inches.

Example 11. Piece 1x14-16. Has two inches of stained sap for four and one-half feet in center on one edge and a streak of stained sap at both ends of other edges. The reverse side shows one pitch spot 2x3 inches and three inches stained sap, same as in center of the other side. Two or three inches of white sap on each edge of both ends.

Example 12. Piece 1x14-16. Has one three-fourth-inch poor knot and three one-half-inch black knots, also four feet of tight shake at one end. Reverse side shows same knot and shake defects with three inches of white sap for two feet.

Example 13. Piece 1x18-16. At first appearance this board seems to be clear, but on closer examination a great deal of close tight shake is found to be scattered over at least one-half of the face. The shake, however, is very fine and probably will not open up.

Example 14. Piece 1x16-16. Has the appearance of an extra sound "D" Box. The knots are smaller and in general appearance much above the average "D" Box grade. The sap is white and there are ten small knots, three of which are one inch in diameter, and the remainder from one-half inch down to a pin knot.

Example 15. Piece 1x13-14. Within one foot of end is one and one-fourth-inch sound, black knot; also a one-fourth-inch black knot, and scattered over the face are two one-half-inch and two pin knots, with three inches of bright sap on one edge, running off at nine feet.

Example 16. Piece 1¼x12-16. Face has slightly colored sap two inches wide on one edge for ten feet; other edge has same amount and kind of sap for two feet, but no other imperfections. Reverse side shows slightly colored sap over the full width for eight feet in length.

Example 17. Piece 1½x20-16. Face side shows worm holes sixteen inches from end in center; one three-fourth-inch black knot three feet from end on one edge; a one-half-inch black knot in center and seven feet from the other end within twelve inches of same end, one red knot three-fourths by one and one-half inches near edge; also three inches of white sap on both edges for twelve feet, with one-half inch wane for eight feet on one edge. Reverse side shows less sap, but same knot defects, except that knots show larger.

Example 18. Piece 1¼x16-16. Has two feet very fine shake across the face at one end, one and one-half inches of it on edge extending for four feet; another trace of shake on edge near opposite end, also one and one-fourth inches soft rotten knot and one and one-fourth inches of dead sap tapering out at four feet.

Example 19. Piece $1\frac{1}{2} \times 16-16$. Has two feet very fine shake across face on one end, one and one-half inches on one side extending for four feet; another trace of shake on edge near opposite end and on same end one three-fourth-inch soft rotten knot, and one and three-fourths inches of dead sap, tapering off at four feet. At center of piece are two three-eighths inch knots. The reverse side shows same rotten knot, and blue sap averaging two and one-half inches in width the whole length of one edge. The other edge has two inches of stained sap for two feet.

Example 20. Piece $1\frac{1}{2} \times 18-16$. The face has nine black knots from one-fourth to one-half inch in diameter, well scattered, one of the one-half-inch knots being unsound. Also contains one and one-half inches of blue sap full length of one edge, and a small amount of shell shake for two feet from one end. Reverse side shows five of the one-half-inch knots that run through from the face, and three inches of dead sap the entire length of one edge.

Example 21. Piece $1 \times 10-14$. The face is covered with white sap for two feet at one end, and extends along one side two inches wide for half the entire length, also one one and three-fourths inches, one one-half inch black knots and one pitch pocket all well scattered.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"D" SELECT.

"D" Select should be eight inches and over in width.

This grade admits any piece of lumber that has the appearance of finishing or a percentage of cutting in which the defects are too numerous or too serious to admit of its being graded into "C" Select.

Blue sap covering two-thirds of the face will be admitted. This description embraces one inch, one and one-fourth inch, one and one-half inch and two inch stock, and is graded strictly from the face without regard to the back, and can not be recommended for quality.

See General Instructions.

EXAMPLES.

Example 1. $1 \times 10-16$. Face shows a great deal of shake for two-thirds of length, and three spots of rough mill work. This piece is smooth in appearance, but extremely shaky.

Example 2. Piece $1 \times 14-16$. Very smooth in appearance. No knots, but fine shake over two-thirds of face, with some blue sap on each edge at one end.

Example 3. Piece $1 \times 8-16$. Shows blue sap three inches wide on each edge for ten feet. No other imperfections.

Example 4. Piece $1 \times 8-16$. Has smooth appearance. Shows partially blue sap over face for six feet. Otherwise good.

Example 5. Piece $1 \times 10-16$. Shows a "B" Select face, but the reverse side shows the dry rot and worm hole defects of a No. 4 board.

Example 6. Piece $1 \times 8-16$. Shows blue sap well streaked over eight feet of the face. The balance of good appearance.

In inch lumber and thicker, pieces from four to eight inches wide may be graded under this rule, if so specified.

"D" STOCK AND BOX.

This is a grade of smooth-looking and sound-knotted lumber with edges free from wane and the grade practically free from shake.

The knots may be either black or red, but should be sound and firmly set, varying in size from an inch and a half down.

A "D" Box board may have any number of knots, depending entirely upon size and location.

A 12-inch "D" Stock board should contain a less number of knots than a "D" Box, and eight and ten-inch "D" Stock boards relatively smaller knots and less in number. This grade is nothing more than an extra smooth No. 1 Common.

See General Instructions.

EXAMPLES OF "D" STOCK.

Example 1. Piece $1 \times 12-14$. Has three red knots one inch in diameter, ten knots one-half inch in diameter, and ten small pin knots. There is no sap.

Example 2. Piece $1 \times 12-14$. Has three knots $1\frac{1}{2} \times \frac{3}{4}$ inches, part red and part black, and six knots one inch in diameter, also six small pin knots, red and black mixed.

Example 3. Piece 1x12-16. Has six knots one-half to one inch in diameter and fourteen knots less than one-half inch in diameter, one and one-half inches of sap on one edge for entire length of piece, partly blue. Other edge has one inch partly blue sap. This board is perfectly smooth and sound in appearance.

Example 4. Piece 1x12-16. Has twenty-eight knots, of which six are oblong, one-half by one and one-fourth inches, and eight round, red knots one-half to one inch in diameter. The balance are pin knots.

Example 5. Piece 1x10-16. Has twenty sound, black knots extending over entire face that will average less than one inch in diameter. Edges are square and piece otherwise sound.

Example 6. Piece 1x12-16. Has twenty-five sound knots from one-quarter to one-half inch in diameter. Five being red and balance black. Four of the one-half-inch red knots at one end are in a cluster. The board is otherwise sound and of good appearance.

Example 7. Piece 1x12-16. Contains twenty-five red and black knots scattered over the face, five being one-half inch in diameter and the others smaller; also has two inches of bright sap full length of one edge and one-half inch bright sap full length of other edge. The board is otherwise perfect.

Example 8. Piece 1x8-16. At one end in a space of three feet there are three black knots, one-half inch in diameter, and one black knot three-quarters of an inch in diameter. The center contains two pin knots; at the other end within a space of five feet there are eight sound red knots, two being one inch in diameter, two are one-half inch in diameter and four are pin knots. At a glance this would be considered a fair type of "D" Stock.

Example 9. Piece 1x8-16. There are twenty sound black knots in this piece, none of them exceeding one-half inch in diameter, and all within a space of twelve feet. This is a high grade of "D" Stock.

EXAMPLES OF "D" BOX.

Example 1. Piece 1x18-16. Well scattered over this piece are fifteen round black knots from one-eighth inch to one inch in diameter and at one edge three feet from end a cluster of three-quarters-inch sound red knots. An inch of white sap shows along two-thirds of one edge and nearly as much along the other edge.

Example 2. Piece 1x14-16. Has seventeen black knots ranging in size from one inch in diameter down to a pin knot; no other defects. This is considered a high type of "D" Box.

Example 3. Piece 1x14-12. One end has a sound red knot, one by two inches in diameter, and a three-quarter-inch red knot within six inches of it. The balance of the face contains eleven small knots well scattered. The piece is otherwise perfect.

Example 4. Piece 1x14-16. Contains eighteen sound knots, three of which are one by one-half inches; five are three-quarter-inch and ten are pin knots, all well located.

Example 5. Piece 1x16-14. There are twenty-one sound knots in this piece, eight being black, two of which are one and one-half inches in diameter.

Example 6. Piece 1x16-14. There are twenty-one sound knots in this piece; eight being black, two of which are one and one-half inches in diameter, and the balance three-quarters of an inch and less. There is also one and one-half inches of bright sap the entire length of one edge.

Example 7. Piece 1x13-16. Has thirteen black and two red knots, all about one-half inch in diameter, well scattered over the face, and two inches of bright sap for six feet on one edge.

"C" AND BETTER NORWAY.

C and Better Norway shall be four inches wide and wider and of the same thickness as white pine.

White sap is no defect, and one-fifth the surface of the face may be covered with sound, stained sap, if not in combination with other defects.

This grade should be practically free from shake, rot and splits.

The knotty and wane defects in the low line pieces of this grade should be the same as in the grades of white pine B Strips and B Selects.

All knots to be sound and firmly set. The product of the log better than described above is included in this grade.

SIDING.

GENERAL INSTRUCTIONS.

Beveled Siding should be graded from the face side only. Defects on the thin edge which will cover when laid should not be given the same consideration as defects elsewhere.

"A" AND CLEAR SIDING.

"A" and Clear Siding will admit of bright sap on thin edge which will cover when laid, or a half-inch of bright sap on thick edge for one to two feet, or in the absence of sap one or two pin knots.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Shows one-half inch bright sap on thin edge for two-thirds of the length. Otherwise perfect.

Example 2. Piece $\frac{3}{8} \times 6-16$. Shows three-fourths inch of bright sap on thin edge for ten feet. One knot one-fourth inch in diameter, three feet from end, and at six inches from other end a slight trace of pitch.

Example 3. Piece $\frac{3}{8} \times 6-14$. For seven feet on thin edge there is one-half inch of sap that is slightly discolored; at the center of the piece is one one-fourth inch black pin knot.

Example 4. Piece $\frac{3}{8} \times 6-14$. On the thin edge there is one-half inch black knot. Otherwise the piece is perfect.

Example 5. Piece $\frac{3}{8} \times 6-16$. Contains two one-fourth-inch black knots, one being three feet from end and the other near the center of the piece. No other defects.

Example 6. Piece $\frac{3}{8} \times 6-16$. This piece is without a defect.

Example 7. Piece $\frac{3}{8} \times 6-16$. Shows no defect except one-quarter inch of white sap on thick edge three feet in length.

Example 8. Piece $\frac{3}{8} \times 6-16$. Shows one pin knot on thick edge less than one-half inch in diameter.

"B" SIDING.

"B" Siding will admit of any amount of white sap, or two or three sound knots not to exceed one-half inch in diameter, well scattered over the face of the piece."

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Shows a heavy pitch spot one inch long on thin edge, a torn defect on same edge that covers when laid, a pitch pocket one-fourth inch wide by one and one-fourth inches long, two inches from thick edge at the center of the piece, and for six feet on thick edge shows an inch of white sap.

Example 2. Piece $\frac{3}{8} \times 6-16$. Has four very small, smooth knots, one-fourth inch or less in diameter, within four feet of end near thin edge and a one-half-inch round, red knot within two inches of thick edge and six feet from same end.

Example 3. Piece $\frac{3}{8} \times 6-16$. Has one-half inch white sap the whole length of thick edge and a large curl four feet from one end with one-half inch sound knot.

Example 4. Piece $\frac{3}{8} \times 6-16$. Has a black knot on the thin edge that will cover, a one-half-inch black knot one inch from thick edge and two pin knots that show.

Example 5. Piece $\frac{3}{8} \times 6-16$. Shows three-fourths inch of white sap on thick edge, and six feet from end; a one-fourth-inch black knot at center of piece and at four feet from other end and on thick edge a one-fourth-inch black knot.

Example 6. Piece $\frac{3}{8} \times 6-16$. Has a three-fourth-inch black knot five feet from one end. The piece is not smoothly dressed; otherwise perfect.

Example 7. Piece $\frac{3}{8} \times 6-16$. Has a one-half by three-fourths-inch knot on the thick edge, three feet from end and one-half-inch white sap for two-thirds of length on thick edge.

Example 8. Piece $\frac{3}{8} \times 6-16$. Has two one-half-inch black knots within two and one-half feet of one end. Another one-half-inch knot five feet from same end, all of which shows when laid.

Example 9. Piece $\frac{3}{8} \times 6-16$. Has bright sap on thick edge, commencing at one end, one and one-fourth inches deep and running out at twelve feet. With the exception of two curls has no other defects.

Example 10. Piece $\frac{3}{8} \times 6-16$. Has an inch of sap on thick edge for ten feet. For one foot at end this sap is blue. Within three feet of other end is a three-eighths-inch black knot.

Example 11. Piece $\frac{3}{8} \times 6-16$. Has white sap covering the entire face. No other defects.

"C" SIDING.

"C" Siding will admit of any amount of bright sap.

When sap defect is not too pronounced, two or three small knots, not exceeding one inch in diameter, or more knots when smaller, or slight shake are admissible.

A small amount of slightly blue sap on the thick edge is admissible, or more blue sap on the thin edge.

Defects requiring one cut not to exceed four inches of waste, are allowed in high line pieces twelve feet long and longer.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Has a three-fourth-inch black knot five feet from one end. A small pitch pocket and a little very tight shake within twelve inches of same end of piece.

Example 2. Piece $\frac{3}{8} \times 6-16$. Has a half-inch black knot on thick edge, five feet from end, and at seven feet another same-sized knot. Within five feet of the other end is a one-half-inch loose knot and one-quarter inch of blue sap for six feet on thick edge.

Example 3. Piece $\frac{3}{8} \times 6-16$. Contains white sap one-half the width of the whole length and is slightly damaged in two spots by bad mill work.

Example 4. Piece $\frac{3}{8} \times 6-16$. Has a one-half-inch black knot three feet from the end that partly covers when laid. A pitch streak two inches long four feet from the same end, a three-fourth-inch black knot five feet from end and three-quarters of an inch of white sap for three feet on thick edge at the same end. One-half inch of white sap shows for two feet on thick edge of other end with two feet of shake that will cover when laid.

Example 5. Piece $\frac{3}{8} \times 6-16$. Has five pin knots well scattered over face of piece. On thick edge is one-quarter inch of stained sap for three feet. On thin edge is a little shake that nearly covers.

Example 6. Piece $\frac{3}{8} \times 6-16$. Has three knot holes on thin edge that will cover when laid, and four black knots one-quarter inch to one-half inch in diameter, well scattered.

Example 7. Piece $\frac{3}{8} \times 6-16$. Has one and one-half inches of sap on thick edge for two-thirds of the length. Within five feet of the end one foot of the sap is discolored and for two feet it is blue for three-quarters of an inch in width. A three-quarter-inch knot on the thin edge. This piece has a very smooth appearance.

Example 8. Piece $\frac{3}{8} \times 6-16$. Has a one and one-half inch black loose knot six feet from end, but otherwise is nearly perfect. This is considered a cutting strip.

Example 9. Piece $\frac{3}{8} \times 6-16$. Has one-quarter inch of wane for four feet on thin edge. Two-thirds of the face is covered with bright sap, except a slight discoloration from a crossing in piling.

Example 10. Piece $\frac{3}{8} \times 6-16$. Is perfect with the exception of three-fourths inch of blue sap running three-fourths the length of the piece on thick edge.

"D" SIDING.

"D" Siding will admit of considerable shake and stained sap. With or without either of these defects a piece may have a number of small knots well scattered over the face.

EXAMPLES.

Example 1. Piece $\frac{3}{8} \times 6-16$. Shows three inches blue sap on thick edge for three feet and a few small pin knots.

Example 2. Piece $\frac{3}{8} \times 6-16$. Has three black knots one inch in diameter, and slight touch of shake.

Example 3. Piece $\frac{3}{8} \times 6-16$. Looks to be clear, but contains considerable close shake.

Example 4. Piece $\frac{3}{8} \times 6-16$. Has twelve small red and black knots well scattered, in size from one-quarter to one-half inch.

Example 5. Piece $\frac{3}{8} \times 6-16$. Considerable blue and white sap; one-half of piece shows white sap and the other is stained, but not very blue.

Example 6. Piece $\frac{3}{8} \times 6-16$. The face of this piece is covered with blue sap for about seven feet; the remainder is perfect.

Example 7. Piece $\frac{3}{8} \times 6-16$. Slightly blue sap covers the entire face; otherwise perfect.

"E" SIDING.

This is the lowest recognized grade of Beveled Siding and will admit of the sap, knot and shake defects not admissible in "D" Siding.

Many pieces showing seriously defective mill work are found in this grade.

FLOORING.

"A" FLOORING.

"A" Flooring is a one-faced strip and should lay with a practically clear face. A half inch of bright sap or one or two small pin knots are admissible in this grade. See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-16. Has no defect.

Example 2. Piece 1x6-14. Has two small black pin knots; no other defects.

Example 3. Piece 1x6-12. Has a strip of perfectly bright sap on one edge three feet in length, varying in width from one-quarter to one-half inch; no other defect.

"B" FLOORING.

"B" Flooring will admit of any amount of white sap, or two or three knots from a quarter to half an inch in diameter.

EXAMPLES.

Example 1. Piece 1x6-16. Free from all defects except a rough spot caused by dressing.

Example 2. Pieces 1x6-16. Has bright sap on edge one-half inch wide for half length of piece and a small pin knot less than one-half inch.

Example 3. Piece 1x6-14. Has at one end one and one-half inch white sap, tapering off and disappearing at three feet from end. No other defect.

Example 4. Piece 1x6-16. Has two small knots six feet apart, black but sound, one a full half inch in diameter and the other smaller.

Example 5. Piece 1x6-12. The entire face is white sap. No defects.

"C" FLOORING.

"C" Flooring will admit of bright sap face or two knots one inch in diameter, or three to five knots one-half inch or less in diameter, but not a combination of these defects unless of a decidedly less amount, and must be practically free from shake.

EXAMPLES.

Example 1. Piece 1x6-14. Has a one-inch firm, sound, black knot, near the center of the piece. One three-eighths inch black, sound knot six feet from end and one and one-fourth inch knot four feet from same end; also eighteen inches of bright sap.

Example 2. Piece 1x6-16. At eight inches from end has one three-eighth inch knot; at three feet has one-fourth-inch knot, and at center two three-eighth-inch knots, all being sound and black. At the other end one and one-half inches bright sap for ten feet.

Example 3. Piece 1x6-14. Contains three small pin knots well scattered and a small pitch pocket three-eighths inch long near end. At the other end is eighteen inches of light shake; smooth appearance.

Example 4. Piece 1x6-16. Has five small black knots, the largest being one-fourth inch in diameter. Otherwise the piece is perfect.

Example 5. Piece 1x6-14. Has eight small black knots the size of a lead pencil, and one-half inch of bright sap for five feet at the end.

Example 6. Piece 1x6-16. Has three inches of bright sap on one edge for full length of piece, except that the sap near one end is slightly stained, but the piece as a whole is very smooth in appearance.

"D" FLOORING.

"D" Flooring is a grade between No. 1 Fencing D & M and "C" Flooring, and will admit in a general way the imperfections of both grades.

In a knotty type the knots must be smaller and fewer in number than in No. 1 Fencing, and may be either red or black.

Some stained sap is allowed and tight local shake.

Defects requiring one cut, not to exceed four inches of waste, are allowed in high line pieces twelve feet long and longer.

EXAMPLES.

Example 1. Piece 1x6-12. Has blue sap over the entire face for one-third of its length, but no other defects. This is considered the limit of blue sap admissible.

Example 2. Piece 1x6-16. Has blue sap across the face for three feet in center of the piece, and two one-half-inch red sound knots two feet from each end.

Example 3. Piece 1x6-16. Has fifteen sound black knots ranging from a half inch down to pin knots and well scattered; also three-fourth-inch white sap on one edge for two-thirds of the length.

Example 4. Piece 1x6-16. Has one-half face bright sap with four one-half-inch black knots and six pin knots well scattered.

Example 5. Piece 1x6-16. Has one black knot three-fourths by one and three-fourths inches, five feet from one end and two one-half-inch knots near other end, with slight pitch streak in center of piece for two feet.

Example 6. Piece 1x6-14. Has ten sound, black knots the largest two being three-fourths inch in diameter and bright sap covering nearly entire face.

Example 7. Piece 1x6-14. Has one black knot, one by one and three-fourths inches in center of piece and one-inch knot two inches from end. Also a rough spot near large knot in center.

Example 8. Piece 1x6-12. At five feet from one end has one rotten knot, one and one-half inches in diameter. Otherwise the piece is perfect.

Example 9. Piece 1x6-14. Has stained sap on each edge of piece full length, the sap varying in width from one to one and one-half inches. No other defects.

Example 10. Piece 1x6-16. Has ten small knots, all red, well scattered, averaging one-half inch in diameter. If the knots had been somewhat larger this piece would have graded No. 1.

FARMER'S CLEAR FLOORING.

Farmer's Clear Flooring is of a practically clear appearance. The knotty defects shall not exceed that of a "C" Flooring. The leading defect is shake, which may be scattered over the face of the strip.

EXAMPLES.

Example 1. Piece 1x6-16. Shows the knotty defects of a "C" flooring and has tight shake scattered over two-thirds of its face. Good appearance.

Example 2. Piece 1x6-16. Shows two inches of blue sap for six feet on one edge, with considerable fine shake over the face. No other defects.

Example 3. Piece 1x6-16. At first appearance this piece seems to be free from all defects. On closer inspection it is found to be very shaky, but the shake is close and tight.

Example 4. Piece 1x6-16. Has no other defects than slightly stained sap covering the entire face.

NO. 1 FENCING D & M.

This should be simply sound No. 1 Fencing worked to flooring, and of the character, when worked, described under the title of No. 1 Common Strips.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-16. Has twenty-two sound, red knots, one being a horn knot three-fourths by four inches long; two knots in middle side by side are three-fourths of an inch in diameter and the balance of knots are one-half inch and less in size.

Example 2. Piece 1x6-16. Has four sound, red knots, the two largest being three-fourths inches by one and one-half inches, and is perfectly sound in every particular.

Example 3. Piece 1x6-16. There are seven round, black knots and two red knots in this piece, the red knots being located near one end and three-fourths inches in diameter. The largest black knot is one and one-fourth inches in diameter and four feet from the same end. The balance of knots are one-half inch and less, and well scattered. It also has a little shell shake at opposite end from large knot and is considered a liner between No. 1 and No. 2 Fencing on account of having a combination of defects mentioned.

Example 4. Piece 1x6-16. Has eighteen sound knots about one-half being black, and ranging in size from one-half inch to one inch in diameter. It is perfectly sound and is considered a good No. 1 strip.

Example 5. Piece 1x6-16. Has thirteen sound, red knots averaging three-fourths inch in diameter, and two sound, red knots one inch in diameter. At the center a little bright sap is shown and also one foot of wane on tongue.

Example 6. Piece 1x6-16. This is a sound heart piece containing seven red knots. One is a pitch knot well set and the balance are of small horn type.

Example 7. Piece 1x6-14. Has five perfectly sound, red knots one and one-half inches in diameter, and seventeen small, red knots one-fourth to three-fourths inches in diameter. This is a typical piece of No. 1 Fencing.

Example 8. Piece 1x6-14. Has six sound, red horn knots running from each edge and nearly meeting. These knots do not impair the strength of the piece.

Example 9. Piece 1x6-16. Has a small cluster of black knots at center, two one-half by one inch black knots near one end and nine other small, black knots well scattered.

Example 10. Piece 1x6-16. This is a Norway strip full of pitch and flat-grained, free from other defects and but for grain would go into "C" and better.

Example 11. Piece 1x6-16. Has twenty-one small, sound knots, the two largest being about one inch in diameter. On the back and at the center of the piece slight wane shows on both edges for thirteen inches, but not enough to impair the tongue or groove.

Example 12. Piece 1x6-16. Has one one-half-inch knot, three feet from one end; one three-eighth-inch knot four feet from other end; one five-eighth-inch knot near center. All knots sound and firmly set. The whole face of the piece is slightly stained with blue sap. No other defects.

No. 2 FENCING D AND M.

This should be simply No. 2 Fencing worked to flooring, and of the character, when worked, described under the title of No. 2 Common Strips.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-14. Has eight black knots, three are one-half inch in diameter within three feet of one end and one of them is an edge knot, the other five knots are one and one-half inches in diameter, scattered over the face of the piece. At the opposite end from the large knots is a one-half inch hole where a knot has sloughed off in working.

Example 2. Piece 1x6-14. Has seven small, black knots that would readily be admitted as a No. 1 strip if one of the edge knots had not come out in working.

Example 3. Piece 1x6-12. Has white sap full length of piece on one edge. One end has a streak of pitch averaging three-fourths inch for five feet, at opposite end, an open pitch streak for two feet, and three one-inch knots.

Example 4. Piece 1x6-14. Has four black knots from one to one and three-fourths inches in diameter, two pitch knots one and one-half inches wide by four inches long, and seven knots one and one-half inches and smaller. All are well scattered over the face.

Example 5. Piece 1x6-16. At one end has one and one-half inch sound, red knot and one one-half inch red knot. The center has two one-inch sound red knots and part of a one and one-half inch loose knot on grooved edge. Scattered over the face within six feet of other end are ten sound pin knots and three two-inch sound red knots.

Example 6. Piece 1x6-16. Has twenty-two black knots scattered over face, three being loose and on one edge a little light shake. None of these knots will exceed one inch in diameter.

Example 7. Piece 1x6-16. This is a smooth looking strip, its principal defect being a light shell shake extending over two-thirds of the face; also five small knots well scattered and a half inch edge knot-hole.

Example 8. Piece 1x6-16. This is a sound small knotted piece and would be No. 1 if it were not that a knot one inch by one-half inch is gone out of the edge.

Example 9. Piece 1x6-16. Is coarse in appearance on account of two large limb knots extending across the face. Knots are red.

Example 10. Piece 1x6-16. Contains nine knots from one-half inch to one inch in diameter, part of them black and one edge knot partly broken out in dressing. On one edge is a slight trace of rot, but the piece is of a very sound character.

Example 11. Piece 1x6-16. Has sound red knots of all sizes up to two inches and has one inch of black sap for six inches on one edge. This is considered a fine type of No. 2.

Example 12. Piece 1x6-16. At first appearance looks like a "D" Flooring strip, the apparent defect being a half dozen small knots averaging less than an inch. On close inspection considerable shake is found, rather more than is admissible in No. 1.

Example 13. Piece 1x6-16. Has too much blue stain to be admitted into either the grade of "D" or Shaky Clear Flooring, the entire face being covered, but on account of its otherwise good appearance is graded No. 2.

No. 3 FENCING D AND M.

No. 3 Fencing D and M is the regular grade of No. 3 Fencing worked to flooring and may contain coarse knots, an occasional knot-hole, splits, wane, worm-holes, streaks of red rot, and a great deal of shake, but not a serious combination of these defects.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x6-14. Has black knots five-eighths to one inch in diameter, three feet from end, knot sloughed off edge one-half to five-eighths inches. Five inches from same end and on same edge knot five-eighths by one and one-fourth inches sloughed off.

Example 2. Piece 1x6-16. If free from shake this piece would make a good No. 1 Fencing Flooring, but has open shake clear across the face for one-half length of piece.

Example 3. Piece 1x6-16. Has ten branch knots across its face, average size one and one-fourth by two and seven-eighths inches, at intervals of say eighteen inches, running the full length of piece; and also has sound red rot two inches wide in center of board running two feet, at one end of piece.

Example 4. Piece 1x6-14. Has eight small rotten knots with sound rot stains extending from one knot to the other along the whole length of the piece. This piece has a decidedly unsound appearance at the first glance.

Example 5. Piece 1x6-16. Has four good-sized branch knots on face, with some heart shake along the grooved edge; also three-fourths inch wane for two feet at one end of face. The back is also waney on both edges, so much so for half the length that the piece is almost slabby.

COMMON LUMBER.

Common lumber may consist of white or Norway pine, or a mixture of both.

The characteristics of Common lumber, as distinguished from Finishing, consist of a general coarseness of appearance, caused by various defects and combinations of defects, in a greater or less degree according to the grade.

No. 1 COMMON BOARDS AND STRIPS.

No. 1 Common Boards and Strips includes all sound, tight-knotted stock, whether red or black knots, free from very large, coarse knots or any imperfections that will weaken the piece.

This grade should be of a character fitting it for ordinary use except finishing purposes.

Knots, and a small amount of stained sap or a small amount of shake are admissible if they do not affect the general utility of the piece.

Norway boards and strips, except clear and select, should not be put higher than No. 1 Common. The class of Norway admissible in this grade can contain either black or red knots, provided they are small and firmly set and that the piece has a bright appearance.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x12-16. Has four red knots from one and one-half to two inches in diameter and one black knot one and one-half by three inches; also fourteen small knots, all sound and well scattered, these smaller knots varying in size from one-half to one and one-fourth inches.

Example 2. Piece 1x12-16. There are a great many knots in this piece, but they are well distributed, and are sound. Six of them are red, from one and one-half to two inches in diameter. Seven more red knots, about one and one-half inches, and four small black knots not over an inch in diameter.

Example 3. Piece 1x12-14. Has the knot defects and general appearance of a "D" stock. It contains a dozen small sound black knots, and quite a little close shake at one end and an inch of blue sap on one edge, for nearly the full length of the piece. Without the shake it would pass easily for a "D" stock.

Example 4. Piece 1x8-16. Very smooth looking piece, but has six black knots, all sound, from one-half to one and one-half inches in diameter, and a slight touch of blue sap on edge.

Example 5. Piece 1x8-16. Worked to drop siding. Has four red knots about one and one-fourth inches in diameter, and eleven small sound red knots, in size from one-half to one inch in diameter.

Example 6. Piece 1x8-16. Worked to shiplap. Has a great deal of sap, a portion of which is slightly stained, and in addition seven red knots about an inch in diameter, and fifteen smaller ones ranging from one-fourth to one inch in diameter. This has a smooth appearance for No. 1.

No. 2 COMMON BOARDS AND STRIPS.

No. 2 Boards and Strips are subject to the same general inspection as No. 1, except that coarser and larger knots, not necessarily sound, more stained sap and shake are allowed. "V" and coarse limb knots, heart shake or slight trace of rot, when firm or occasional worm-holes, are defects admissible in this grade.

Norway, with medium colored blue stain covering the entire face of the piece, or darker stain covering a proportionately less surface, is admissible when not in combination with other marked defects.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x12-16. Has seven black knots from one and one-half to two inches in diameter and eight smaller knots, part of which are red, and the others black; also shake at one end.

Example 2. Piece 1x12-16. Very smooth in appearance. Looks like a "D" stock; Contains a number of small knots, but a great deal of close shake over the face of one-half of the board.

Example 3. Piece 1x12-16. Has six large branches or "V"-shaped knots, all red, from one and one-fourth to one and one-half inches wide, and from three to four inches long; also a half-dozen smaller red knots from one to two inches in diameter.

Example 4. Piece 1x16-16. Has four large branch knots all black, a little heart shake, or season check, a touch of red stain two inches wide at narrowest place, widening to five inches, in all about four feet in length; also eight or ten small knots well scattered.

Example 5. Piece 1x10-14. Has nine knots both red and black from one and one-half to two inches in diameter; at least a dozen smaller knots from one-half to one and one-fourth inches, both red and black, all well scattered and firmly set.

Example 6. Piece 1x12-14. Contains ten red knots from two to three inches in diameter, and a half dozen smaller ones, all sound; also a single grub or worm hole.

Example 7. Piece 1x6-16. Has a great deal of blue sap, with a dozen small knots, both red and black, well scattered and sound.

Example 8. Piece 1x6-16. Has two red knots two inches in size; four knots averaging an inch, and a half-dozen small ones. Type of a good No. 2.

Example 9. Piece 1x6-16. Has a streak of very firm red rot, from one-half to one inch wide, running six feet in length from one end. Also a half dozen small knots, well scattered. The rot is barely perceptible in the rough strip, and it has therefore a smoother appearance than the average No. 2 Fencing strip.

Example 10. Piece 1x6-16. Has three large worm-holes and considerable shake, both well scattered. In appearance very smooth, and an acceptable grade, whether used rough or D & M.

Example 11. Piece 1x12-14. The face contains a large number of sound knots, and would be No. 1 were it not that it also has six white worm or grub holes, well scattered. If it were ten inches wide, not more than three or four worm holes would be admitted.

No. 3 COMMON BOARDS AND STRIPS.

The general appearance of this grade of lumber is coarse, admitting:

Large, loose or unsound knots.

An occasional knot-hole.

A great deal of shake.

Some red rot.

Large worm-holes.

Any amount of blue sap.

Not a serious combination of these defects in any one piece is admissible.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x18-16. Badly split at one end for six feet, and sprinkled with a dozen knots.

Example 2. Piece 1x16-14. Very shaky all over, so much so that shake can be plainly seen. No other defect.

Example 3. Piece 1x14-14. Has twelve large knots from two to three inches in diameter, some of them soft and unsound. Also a half dozen small knots and a split two feet in length at one end.

Example 4. Piece 1x12-16. Has six large branch knots, very coarse in appearance and which materially weaken the board. Otherwise sound.

Example 5. Piece 1x10-14. Worked to shiplap. Has four black knots about one and one-half inches in size and one knot hole of same size.

Example 6. Piece 1x10-14. Has eight small knots one inch in diameter. The knots are soft and rotten. If knots were sound, the board would pass for a "D" stock.

Example 7. Piece 1x10-14. Worked to shiplap. Has four sound knots one and a half inches in diameter, and one unsightly, coarse, black knot, two inches wide and six inches long.

Example 8. Piece 1x10-16. Worked to shiplap. One end smooth and free from all defects except a few pin knots. The other end shows three feet containing red rot four to six inches in width.

Example 9. Piece 1x8-16. Worked to flooring. Shows a dozen small, black knots, and red rot, of a firm texture, over one-third of its face.

Example 10. Piece 1x10-16. Worked to shiplap. Has knot defects as are found in No. 1 Common, but also has a dozen large worm-holes, well scattered, which make it a No. 3.

Example 11. Piece 1x10-14. Worked to shiplap. Has four large, black knots, three inches in diameter, one of them rotten; also a few pin knots and a little blue sap.

Example 12. Piece 1x10-16. Full of coarse knots, all sound, but so extremely coarse in appearance that the board is classed as No. 3. Without two or three of the coarse knots it would be a satisfactory No. 2.

Example 13. Piece 1x8-12. Worked to shiplap. Shaky all over but smooth in appearance.

Example 14. Piece 1x6-16. Has one inch of wane on one edge and considerable blue sap. Also one small knot hole an inch in diameter, and one large coarse knot.

Example 15. Piece 1x6-16. Has streak of firm rot four feet long, from one to three inches wide; also some shake at other end.

Example 16. Piece 1x6-16. Has three coarse black knots from two to three inches in diameter.

Example 17. Piece 1x10-14. Has one large sound knot two and one-half inches in diameter at one end of piece. Two feet from same end has rotten knot three-fourths inch in diameter and five feet from same end has dead sap two and one-fourth inches wide on each edge for four feet; also two good-sized worm holes, one knot hole, three-fourths by one inch, and six feet from end one sound red knot one and one-half inches in diameter.

Example 18. Piece 1x12-16. A nice, smooth-looking board with the exception of a rotten limb-knot one-half by two inches six feet from the end and fourteen worm holes well scattered from end to end. Outside of above defects this piece would be a good No. 1 twelve-inch stock board.

Example 19. Piece 1x16-14. Four feet from end of this piece is a bunch of five large sound knots in size from one and one-half to three inches in diameter, and running along piece are six other sound knots ranging in size from one-half to one and one-fourth inches in diameter. Within four feet of the other end of piece there is a knot-hole one and one-half inches in diameter, and an open gum seam about sixteen inches long.

Example 20. Piece 1x8-14. Has several small black knots one-fourth to five-eighths inch in diameter and three sound red knots from one and one-half to two inches in diameter. It also has two knot-holes on same edge of board, one of them one and one-fourth by one and one-half inches in size and six feet from end of piece, the other three-fourths by two inches and situated three feet from same end.

No. 4 BOARDS AND STRIPS.

The predominating defect characterizing this grade is red rot.

Other types are pieces showing numerous large worm-holes, or several knot-holes, or pieces that are extremely coarse knotted, waney, shaky or badly split.

Norway, when extremely cross-checked, is admissible in this grade only.

See General Instructions.

EXAMPLES.

Example 1. Piece 1x18-16. One-half of this board has the general appearance of a No. 2 Common. The other half is composed of red rot, varying from firm to soft.

Example 2. Piece 1x12-16. Alternate streaks of white wood and red rot, fully one-half of the face being red.

Example 3. Piece 1x12-16. Contains a dozen large worm-holes, considerable rot and a few coarse knots.

Example 4. Piece 1x12-14. Contains four large knot-holes with other knot defects.

Example 5. Piece 1x12-16. Has the knot defect of a No. 2 board, but contains also twenty-five or thirty large worm-holes. No rot or knot-holes.

Example 6. Piece 1x12-12. Very badly split in two or three places. No rot or knot defects to speak of, but board is badly shattered.

Example 7. Piece 1x10-16. Three-fourths of the face of this board shows red rot, but very little soft rot.

Example 8. Piece 1x4-16. Shows a good face, but it is excessively waney on back, there being four feet of it showing all slab. Face equal to No. 2 in quality.

No. 5 BOARDS.

No. 5 Boards is the lowest recognized grade and admits of all defects known in lumber, provided the piece is strong enough to hold together when carefully handled.

JOISTS, SCANTLING AND TIMBER.

No. 1.

No. 1 joists and scantling must be of a good, sound character, but will admit of defects that do not impair the strength of the piece.

On basis of 2x4, wane on edge is admissible, $\frac{1}{2}$ inch deep, for half the length, or a proportionate amount for a shorter distance or on both edges. In any case, one side and two edges should allow a good nailing surface. It being understood, however, that the wane shall in no case extend over one-half the side of the piece.

A few worm holes admissible.

Stained sap is not considered a defect.

Timbers and 3-inch plank admit proportionately greater defects.

No. 2.

No. 2 will admit of large, coarse knots, not necessarily sound, considerable wane, also shake, worm-holes, red, dozy streaks, crooked pieces or other defects which weaken or impair the piece to such an extent as to render it unfit for No. 1 grade.

No. 3.

No. 3 will admit a great deal of rot and all the imperfections allowed in No. 1 and No. 2, but in a much more pronounced form.

THICK COMMON LUMBER.

GENERAL RULE.

Common lumber, one and one-fourth inches and thicker, shall be graded the same as inch lumber.

TANK STOCK.

Tank Stock shall be of dimension sizes, square edged, practically free from wane and shake, and having any quantity of sound, water-tight knots.

White sap is no defect.

SELECT COMMON.

Select Common shall be of dimension sizes, of White Pine, and of a smooth, common appearance on the face side.

White sap shall not be considered a defect in this grade.

A slight amount of stain is admissible on the face, and any amount of sound, stained sap on the back.

A small amount of shake may show on the face when not in combination with other marked defects.

Any quantity of small sound knots, red or black, that do not give too coarse an appearance to the piece, are admissible.

The face of piece should be practically free from wane, while the back may show a moderate amount, as well as other defects.

STEP PLANK.

Step Plank shall be white pine, 8 inches or wider, and shall grade the same as No. 1 Common Boards.

FLAT COMMON.

Flat Common shall be white pine, 6 inches or wider, and shall be graded the same as No. 2 Common Boards and Strips.

No. 1 BOX.

No. 1 Box shall be graded the same as No. 3 Common Boards and Strips.

No. 2 BOX.

No. 2 Box shall be graded the same as No. 4 Common Boards and Strips.

Rules for the Grading of Factory Lumber.—Prepared by the Bureau of Grades.
FACTORY PLANK.

Grades as described under this head are valued for cutting up qualities only, and should not be confounded, either in quality or value, with grades outlined in another part of this book for yard purposes.

Factory plank of all kinds, better than No. 3 Shop, shall be graded for the percentage of Door cuttings that can be obtained.

Two grades of Door cuttings only shall be recognized, and are to be known as No. 1 and No. 2 cuttings.

The only defect admissible in No. 1 Cuttings is white sap.

The grade of No. 1 Door cuttings must be free from all other defects.

The grade of No. 2 Door cuttings will admit of one defect only in any one piece. This may be a small knot of sound character, not to exceed five-eighths of an inch in diameter, or the defect may be slightly stained sap which does not extend over more than one-half the surface of the piece on one side.

SHOP COMMON.

No. 1 Shop Common.—The sizes and grades of cuttings admissible in the grade of No. 1 Shop Common are as follows:

No. 1 Stiles in width $5\frac{1}{4}$ or 6 inches, and in length from 6 feet 8 inches to 7 feet 6 inches.

No. 1 Rails, 9 or 10 inches wide and from 2 feet 4 inches to 3 feet in length.

No. 1 Muntins $5\frac{1}{4}$ inches wide and from 3 feet 6 inches to 4 feet in length.

Any number of pieces of either the Stiles or Rails mentioned above are admissible in the grade of No. 1 Shop Common; but only two Muntins of the sizes mentioned above shall be considered, and one No. 2 Door Stile may also be considered, in securing the required percentage of cuttings in any given plank.

Each plank of No. 1 Shop Common shall contain not less than 50 per cent. nor more than 70 per cent. of Door cuttings of the sizes and grades above mentioned.

No. 2 Shop Common.—The sizes admissible in No. 2 Shop Common are as follows:

Stiles in width $5\frac{1}{4}$ inches or 6 inches and from 6 feet 8 inches to 7 feet 6 inches in length.

Rails 9 or 10 inches in width and from 2 feet 4 inches to 3 feet in length.

Top Rails $5\frac{1}{4}$ inches wide and from 2 feet 4 inches to 3 feet in length. Top Rails must, however, be of No. 1 Door cutting quality.

Muntins $5\frac{1}{4}$ inches wide and from 3 feet 6 inches to 4 feet in length.

Any number of cuttings of any one of the above sizes are admissible in the grade of No. 2 Shop Common.

Each plank of No. 2 Shop Common shall contain either one of the following: At least 25 per cent. of No. 1 Door cuttings, or not less than 40 per cent. of all No. 2 Door cuttings, or not less than $33\frac{1}{3}$ per cent. of No. 1 and No. 2 Door cuttings combined.

No. 3 Shop Common one and one-fourth inches and thicker, will admit all below the grade described as No. 2 Shop Common that is of a cutting type, and suitable for sash, door or other cuttings, and may contain not to exceed 25 per cent. of Step Plank and Flat Common.

FACTORY SELECTS.

Factory C Select.—The grade of Factory C Select shall contain from 70 to 80 per cent. of No. 1 Door cuttings in the sizes specified as admissible in No. 1 Shop.

Factory B Select.—The grade of Factory B Select shall contain from 80 to 90 per cent. of No. 1 Door cuttings in the sizes specified as admissible in No. 1 Shop.

Factory A Select and Better.—The grade of Factory A Select and Better shall consist of all Plank, cutting more than 90 per cent. of No. 1 Door cuttings of the sizes specified as admissible in No. 1 Shop Common.

Note.—All factory plank shall be graded from the poor side, and in determining the percentages of door cutting, consideration must be given to the fact that plank are

to be ripped full length in such manner as will yield the highest grade and largest percentage of door cuttings before cross cutting, except in such cases where plank will yield a higher value by being first cross cut for rails. In such instances as when stock is cross cut for rails, where some of the stock so obtained is too poor for either No. 1 or No. 2 rails, and which yet contain stiles or muntins, or top rails, which can be obtained by ripping this cross cut stock, the door cuttings so obtained shall be figured in, when determining percentages.

INCH SHOP COMMON.

There shall be only one grade of Inch Shop Common.

Cuttings shall be $9\frac{1}{2}$ inches wide or wider, and 18 inches long or longer; or, 5 inches wide or wider and 3 feet long or longer.

Cuttings $9\frac{1}{2}$ inches wide or wider, and less than 3 feet long shall be free from defects on both sides, except white sap.

Cuttings 5 inches wide or wider, and 3 feet long or longer, shall have a C Select or Better, face.

Each piece of Inch Shop Common shall contain 50% or more of any one cutting, or combination of cuttings, described in the foregoing rules for this grade.

SHORT BOX.

Short Box shall include lumber twelve to forty-seven inches long inclusive, three inches and wider, and No. 4 and better.

RULE FOR MEASUREMENT OF FACTORY PLANKS.

Factory Plank may be measured with either a rule or a tape line.

When a rule is used, the number of feet nearest the actual measurement shall be taken.

The additional thickness over inch, shall be added to the surface measurement of the total amount measured.

DOOR CUTTINGS.

The figures on the left of the brackets show the number of feet and decimal parts in each cutting.

The figures on the right show the number of feet and approximate fractions of a foot in each piece of cutting grouped within the various brackets. These fractional figures on the right of the brackets are sufficiently accurate for practical purposes and are to be used in computing the percentage of cuttings in a factory plank.

STILES.				RAILS.			
$5\frac{1}{4}''$	x 6'	8''	— 2.92 ft.	9''	x 2'	4''	— 1.75 ft.
$5\frac{1}{4}''$	x 6'	10''	— 2.99 ft.	9''	x 2'	6''	— 1.875 ft.
$5\frac{1}{4}''$	x 7'		— 3.06 ft.	9''	x 2'	8''	— 2. ft.
$5\frac{1}{4}''$	x 7'	2''	— 3.14 ft.	9''	x 2'	10''	— 2.125 ft.
$5\frac{1}{4}''$	x 7'	4''	— 3.21 ft.	9''	x 3'		— 2.25 ft.
$5\frac{1}{4}''$	x 7'	6''	— 3.28 ft.	10''	x 2'	4''	— 1.94 ft.
6''	x 6'	8''	— 3.33 ft.	10''	x 2'	6''	— 2.08 ft.
6''	x 6'	10''	— 3.42 ft.	10''	x 2'	8''	— 2.22 ft.
6''	x 7'		— 3.5 ft.	10''	x 2'	10''	— 2.36 ft.
6''	x 7'	2''	— 3.56 ft.	10''	x 3'		— 2.5 ft.
6''	x 7'	4''	— 3.66 ft.				
6''	x 7'	6''	— 3.75 ft.				
MUNTINS.				TOP RAILS.			
$5\frac{1}{4}''$	x 3'	6''	— 1.53 ft.	$5\frac{1}{4}''$	x 2'	4''	— 1.02 ft.
$5\frac{1}{4}''$	x 3'	8''	— 1.6 ft.	$5\frac{1}{4}''$	x 2'	6''	— 1.09 ft.
$5\frac{1}{4}''$	x 3'	10''	— 1.68 ft.	$5\frac{1}{4}''$	x 2'	8''	— 1.17 ft.
$5\frac{1}{4}''$	x 4'		— 1.75 ft.	$5\frac{1}{4}''$	x 2'	10''	— 1.24 ft.
				$5\frac{1}{4}''$	x 3'		— 1.31 ft.

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Standard Specifications of White Cedar Products.

Revised January 9, 1906

STANDARD SPECIFICATIONS OF WHITE CEDAR POSTS.

Length of 7-foot posts may be 6 feet 10 inches; length of 8-foot posts may be 7 feet 10 inches; cut from live timber and peeled. Size of posts at top end may be one-fourth inch less than diameter specified. Pipe rot is allowed, and other rot defects which do not impair the strength of the post for the uses of a fence post. Four inches sweep one way is admissible. Discoloration or evidence of age, no defect, providing stock is reasonably sound and cut from live timber. Green, fresh cut or water-soaked posts must be plump measure for diameter specified.

LARGE POSTS AND SMALL POLES.

Sizes, 4-inch 10 feet to 4-inch 25 feet inclusive. Sizes at top end may be one-fourth inch less than diameter specified. Lengths may be two inches scant. On posts and poles 10, 12, 14, 16 and 18 feet long, 4-inch crook one way allowed, 20 and 25 feet, 5-inch crook allowed. Pipe holes in tops allowed. Must be cut from live timber and in other respects conform to post specifications. Green, fresh cut or water-soaked stock must be plump measure for diameter specified.

Measurement for sweep on 18-foot, 20-foot and 4-inch 25-foot poles shall be taken as specified for standard telegraph, telephone and electric poles except that measurement shall be made from a point four feet from the butt instead of six feet as specified for the larger poles.

STANDARD TELEGRAPH, TELEPHONE AND ELECTRIC POLES.

Sizes, 5-inch 25-foot and upwards. Above poles must be cut from live growing timber, peeled and reasonably well proportioned for their length. Tops must be reasonably sound, and when seasoned must measure as follows: 5-inch poles, 15 inches circumference at top end; 6-inch poles 18½ inches in circumference at top end; 7-inch poles, 22 inches circumference at top end. If poles are green, fresh cut or water-soaked, then 5-inch poles must be 5 inches plump in diameter at top end, 6-inch poles must be 19½ inches in circumference, and 7-inch poles 22¾ inches in circumference at top end. One way sweep allowable not exceeding one inch for every five feet, for example, in a 25-foot pole, sweep not to exceed five inches, and in a 40-foot pole eight inches; in longer lengths one inch additional sweep permissible for each additional five feet in length. Measurement for sweep shall be taken as follows: That part of the pole when in the ground (six feet) not being taken into account in arriving at sweep, tightly stretch a tape line on the side of the pole where the sweep is greatest, from a point six feet from butt to the upper surface at top, and having so done measure widest point from tape to surface of pole, and if, for illustration, upon a 25-foot pole said widest point does not exceed five inches said pole comes within the meaning of these specifications. Butt rot in the center including small ring rot outside of the center; total rot must not exceed 10 per cent. of the area of the butt. Butt rot of a character which plainly seriously impairs the strength of the pole above ground is a defect. Wind twist is not a defect unless very unsightly and exaggerated. Rough large knots if sound and trimmed smooth are not a defect.

SPECIFICATIONS FOR STANDARD TIES.

A standard tie shall be 6-inch face and wider, 12 inches from small end, 6 inches thick and 8 feet long sawed ends. Ties made different from these specifications shall be regarded as special contracts.

SHINGLE SPECIFICATIONS.

Extra Star A Star Shingles shall be manufactured as follows: 10 inches clear and better from butt, with all clears in; nothing narrower than 3 inches in width allowed; 5 butts to measure 2 inches when sawed. All extra Star A Star Shingles to be 16 inches in length. Standard Star A Star Shingles shall be 5 to 10 inches clear from butt; nothing narrower than 2 inches allowed; 5 butts to measure 2 inches when sawed; 10 per cent. sap is allowed in this grade.

Inspection Comments upon Northwestern Cedarmen's Association Specifications by Official Inspection Committee.

POSTS—SIZES.

The specifications are plain in regard to top diameter and length. They provide that posts $2\frac{3}{4}$ inches at top pass as 3-inch posts, and $3\frac{3}{4}$ -inch posts as 4-inch, and on throughout the list of sizes.

The variation in length of posts is admitted on account of the inaccuracies accompanying the cutting of cedar in the woods by hand.

REASONABLY SOUND.

The phrase "reasonably sound" is intended to cover stock which while containing rot defects, is yet sufficiently strong for the purpose for which it is intended.

It must be borne in mind that rot in cedar is a defect only when it seriously impairs the strength of the piece.

ROT.

All cedar trees are more or less rotten, but this rot does not spread after the tree is cut. While growing, cedar is perhaps the most rotten of all timbers growing in this latitude, after the tree is cut down it is the most durable timber this latitude produces.

DISCOLORATION

Cedar which has been floated down streams or which has been exposed to the weather for any length of time, usually becomes dark-colored and unsightly. A few months' exposure will frequently accomplish this result. The test of live good timber is to whittle a shaving from the sap wood. If the sap is white you may be sure it is live first-class timber. When cedar dies the sap wood becomes gray and spotted.

POLES.

The phrase "reasonably sound" occurs again in the pole specifications, and is meant to cover occasional pencil holes in the tops of poles, when these holes, which are very common in cedar, do not affect the strength of the pole they are not considered a defect.

LIVE TIMBER.

One of the most important items in the inspection of poles is to be sure that when the tree was cut it was alive and growing. Live cedar always has a ring of white sap wood surrounding the heart wood. No matter how unsightly or discolored the exterior of the pole may be, a shaving from a live pole will show white sap wood. It occasionally occurs that a dead streak will be found on a pole caused by injuries to the growing tree. If the dead sap wood covers only a small part of the circumference and is shallow, not extending into the heart of the tree, it does not necessarily affect the strength of the pole, but a pole encircled with gray, dead sap wood is brittle, without elasticity and unfit to bear any strain.

MEASUREMENT.

All 4-inch top poles are classed under rules relating to posts, and are measured by top diameter in same manner, the rules admitting poles $3\frac{3}{4}$ inches in diameter as 4-inch poles. The first size on the list of standard telegraph, telephone and electric light poles is what is called the 5-inch pole and for this size and all larger poles the measurements are given in circumference figures.

For the purposes of brevity the terms 5"-25', 6"-25', etc., are used, but with poles of this size the top diameter is not a correct means of measurement, as the tops are not exact circles, but sometimes vary a full inch when measured at different points.

The standard circumference of a 5-inch pole is 15 inches. Frequently poles will be found full 15-inch circumference, which measure in diameter less than 5 inches.

In measuring poles the tape should be used to ascertain the circumference of the top, which should be not less than measurements given in specifications for the size of the pole under consideration. This method of measurement is in common use with all the large companies, and is generally well understood, but occasionally some of the companies use a straight rule to measure diameter only, with the result that in a lot of 5-inch poles they may find a few not full 5 inches in diameter, but if these poles were measured by tape they would be found fully up to specifications. The use of the terms 5, 6 and 7-inch tops are misleading, and circumference measure should be used.

BUTT ROT.

The Association Specifications admit butt rot to the extent of 10 per cent. of the total area of the butt. This is usually satisfactory, but it is impossible to frame a set of rules for inspection of butt rot that will apply in all cases. Nearly all cedar trees of any size have rotten hearts at the butt. Usually this rot does not extend more than 4 or 6 feet upwards into the tree. It sometimes occurs that a butt will show very rotten without extending into the pole sufficiently to weaken it.

CROOK.

The rules for the measurement of crook are generally understood. They admit a crook one way of 5 inches on a 25-foot pole, 6 inches on a 30-foot pole, 7 inches on a 35-foot pole, measuring the crook from a point 6 feet from the butt to the top of the pole.

Approved at the annual meeting of the Northwestern Cedarmen's Association, at Menominee, Mich., January 7, 1902.

RULES FOR THE GRADING OF HEMLOCK LUMBER.

Adopted at Stevens Point, Wis., July 7, 1897. Revised at Wausau, Wisconsin, February 20, 1906, by the Northwestern Hemlock Manufacturers' Association.

GENERAL INSTRUCTIONS.

The principal objects to be sought in the formulation of these rules are, to establish grades that will blend the slight characteristics incident to different localities in such a manner as to produce grades of equal quality and value, and so constructed as to be best adapted to the principal purposes for which hemlock lumber can be utilized.

1. The face side of the lumber is the side showing the best quality or appearance.
2. Defects in lumber should be distributed in proportion to the size of the piece. Long or wide pieces of the same grade may contain more and greater defects than shorter or narrower pieces. The same percentage should be observed in both long and short, wide and narrow.
3. Wane in lumber is a defect which can not be described by rule with satisfaction, and therefore must be left to the judgment of the grader. The lowering of grade on the face side on account of wane should be governed by grade, width and defects in the piece.
4. Lumber must be accepted on grade in the form in which it was shipped. Any subsequent change in manufacture or mill work will prohibit an inspection for the adjustment of claims, except with the consent of all parties interested.
5. Mixed width boards do not necessarily require as good edges as shiplap or dressed and matched stock of the same grade.
6. Planing mill work should be taken into consideration in all grades of dressed lumber, and its effect on a piece must be left largely to the judgment of the inspector.
7. The grade of partition shall be determined from its poorer side only, when the order specifies partition.
8. Lumber when worked shall be graded the same as the respective grades when in the rough.
9. Unless otherwise provided for, lumber worked two sides shall be graded from its better face; lumber worked one side shall be graded from its surfaced face.
10. The examples given in this book do not in all cases include all of the different types in any grade.

WATER STAIN.

11. In hemlock will often be found streaks or patches of red or brown discoloration, sound and firm, the presence of which does not weaken the wood, nor detract seriously from its utility. Water stain should not be confused with rot, being firm and strong, while rot is soft and decayed wood.

THICK D AND BETTER.

1. Thick D and Better shall be four inches wide and wider, one and one-fourth inch, one and one-half inch and dimension thickness.
2. This grade shall have sound, square edges, and be of the grade of Inch D Stock and Better on the face side, and not below the grade of Inch No. 1 Common on the back of the piece.

EXAMPLES.

Example 1. Piece 2x4-14. S. 2 S. Has one black three-fourth-inch knot four feet from end, two one-half-inch black knots near center. All knots sound and firmly set. No other defects.

Example 2. Piece 2x4-16. S. 2 S. & E. Has one one-inch red knot twelve inches from end; two one-half-inch red knots within eight inches of each other, and four feet from end; one three-fourth-inch red knot six feet from other end. All knots sound and firmly set. No other defects.

Example 3. Piece 2x6-16. S. 4 S. Has twelve sound, firmly set red knots from one-eighth to one inch in diameter, scattered over face of piece. No other defects. Good edges.

Example 4. Piece 2x8-14. Has three red, spike knots from one and one-half to two inches long; one three feet from one end, one four feet from the other end; and the other six feet from the same end. There are any number of small pin knots scattered over the face. All knots red, sound and firmly set. No other defects. Good edges.

Example 5. Piece 2x8-16. S. 2 S. Has three one and one-fourth-inch red knots, located respectively three feet from one end, one five feet from same end and one near center. Seven one-inch to one-half inch red knots scattered over face. All knots sound and firmly set. No other defects.

Example 6. Piece 2x10-14. Has two one and three-fourth-inch red knots within twelve inches of each other six feet from one end and near center crosswise. Three red knots from five-eighths to one inch in diameter scattered over the remainder of the piece. One one-half-inch black knot two feet from end. All knots sound and firmly set. No other defects. Edges good.

Example 7. Piece 2x10-16. S. 4 S. Has three red sound firmly set knots from one-half to one inch in diameter within four feet of one end; and fifteen sound firmly set black pin knots scattered over the remainder of the piece. No other defects. Good edges.

BOARDS AND STRIPS.

There are five grades made in Boards and Strips.

Inch Clear and Select.

Inch D Stock.

No. 1, or Common.

No. 2, or Sheathing.

No. 3, or Cull.

INCH CLEAR AND SELECT.

1. Inch Clear and Select should be four inches and wider, and eight feet long and longer, not to exceed ten per cent. eight feet long.

2. This grade is especially adapted for interior finish and only the face, or best side, is expected to show, although some attention should be given to the back of the piece.

3. The face shall show no wane, but the back may show such an amount of wane or other defects as will not interfere with the use of the piece for finishing purposes.

4. No shake or season check shall be allowed on the face side, but a very little tight shake and checks that are not deep, may appear on the back of the piece.

5. This grade will admit on the face side of several tight pin knots not over three-eighths of an inch in diameter. In a four or six-inch twelve feet and longer piece, not more than three knots are admissible, and proportionately more in a wider piece.

6. A ten or twelve-inch piece twelve feet and longer will not admit of more than three, sound firmly set knots, not to exceed three-fourths of an inch in diameter. Narrower and shorter pieces will admit of fewer large knots, but not a combination of large knots and other defects.

7. Pieces twelve feet and longer are admissible that will, with not more than ten per cent. of waste, produce two clear cuts each four feet long or longer.

EXAMPLES.

Example 1. Piece 1x4-14. S. 2 S. Has one five-eighth-inch red sound firmly set knot six feet from end; and two three-eighth-inch sound black firmly set knots; one two feet from one end and the other three feet from the other end. No other defects. Piece has a smooth appearance.

Example 2. Piece 1x6-16. S. 2 S. Has one three-fourth-inch red knot four feet from end; one three-eighth-inch black knot two feet from end; and one one-half-inch black knot three feet from the other end. All knots sound and firmly set. No other defects.

Example 3. Piece 1x6-10. D. & M. Has one three-eighth-inch black firmly set knot three feet from end, and one knot of same description two feet from other end. No other defects.

Example 4. Piece 1x8-14. Has one checked and broken three-inch knot five feet from one end. No other defects. This is a cutting piece.

Example 5. Piece 1x10-16. S. 2 S. Has two red three-quarter-inch knots, one two feet and the other five feet from one end. One five-eighth-inch black knot three feet from other end; and two three-eighth-inch black knots two and four feet respectively from the same end. All knots sound and firmly set. Piece has clear edges and good, smooth appearance. No other defects.

Example 6. Piece 1x12-12. S. 2 S. Has three small, firmly set black knots scattered over two-thirds the length of the board and near the center crosswise. On one end of the back is three inches of wane running to a feather-edge on extreme end, but gradually receding and running out three feet from the end from which it starts. No other defects.

Example 7. Piece 1x12-14. S. 2 S. Has one three-fourth-inch and two three-eighth-inch firmly set black knots scattered over three feet of the face of the piece near center; one one-half-inch red knot ten inches from end. No other defects.

Example 8. Piece 1x12-16. S. 2 S. Has three three-fourth-inch red and two three-fourth-inch black knots, all sound and firmly set, well scattered lengthwise, and within five inches of the center of the piece crosswise. No other defects.

Example 9. Piece 1x6-14. S. 2 S. Has one three-eighth-inch black knot three feet from end, and one one-half-inch black knot four feet from the other end. Both knots sound and firmly set. Otherwise perfect face. On the back six feet from the end, near the center of the piece crosswise, is very slight fine shake covering about two by six inches. This shake does not go through the face of the piece.

Example 10. Piece 1x8-16. Has three one-half-inch sound, firmly-set black knots scattered over seven feet of the piece. Otherwise perfect face. On the back, commencing five feet from the end and extending along for three feet, are seven checks from two to four inches long, running diagonally. These checks do not extend through or seriously weaken the piece.

INCH D STOCK.

1. **Inch D Stock** shall consist of boards and strips below the grade of Clear and Select four inches and wider, and eight feet long and longer, not to exceed ten per cent. eight feet long, and must be of a sound and water-tight character.

2. All knots must be sound and firmly set. Red knots must not exceed one and one-fourth of an inch in diameter, and spike knots must not exceed in length one-fourth the width of the piece. Black knots must not exceed three-fourths of an inch in diameter and must be especially well set.

3. A six-inch strip twelve feet long shall not contain more than three defects of the extreme sizes. A wider or longer piece may contain relatively more of these defects, and narrower and shorter pieces relatively less. The general appearance of the piece must be taken into consideration.

4. No shake shall be allowed in this grade, but slight season checks and water stain shall not be considered defects.

5. This grade shall be suitable for sound Drop Siding, Ceiling and Flooring, and shall have a smooth appearance, especially on the edges.

EXAMPLES.

Example 1. Piece 1x4-14. D. & M. Has one one-and-one-fourth-inch red knot and seven red and black knots from three-quarters of an inch to pin knots, all sound and firmly set, scattered over the face of the piece. No other defects.

Example 2. Piece 1x4-16. D. & M. Has seven sound, firmly-set black knots from one-half of an inch to one-eighth of an inch in diameter, well scattered over the face of the piece. Eighteen inches of sound, hard water stain near center of piece. No other defects.

Example 3. Piece 1x6-10. Has four sound red, firmly-set spike knots four feet from one end and within ten inches of each other; and four small, black, firmly-set pin knots well scattered. No other defects. Good edges.

Example 4. Piece 1x6-10. Drop Siding. Has nine red knots from one and one-fourth inch to one-fourth inch in diameter scattered over face of piece. Edges good and extra smooth looking.

Example 5. Piece 1x6-10. S. 2 S. Has one three-quarter-inch black knot one foot from end; one one-fourth-inch black knot four inches from end; and one one-fourth-inch black knot four feet from same end. All three knots sound and firmly set. Slight season checks on back running diagonally, but not deep enough to go through to the face or materially weaken the piece. No other defects.

Example 6. Piece 1x6-12. Drop Siding. Has three red knots scattered over one-half length of piece. On one end one-and-one-fourth-inch red knot, and six red knots from one-half inch to one-eighth of an inch in diameter, well scattered over face of piece. No other defects.

Example 7. Piece 1x6-12. Has one red sound firmly-set spike knot running from edge one and one-half inch towards center of piece to a point. Fifteen sound, firmly-set black and red knots from one inch to one-eighth of an inch in diameter, well scattered. No other defects.

Example 8. Piece 1x6-16. D. & M. Has three one-eighth to one-half-inch black knots scattered over five feet on one end of piece. On other end there is wane on one side of the back, running across the piece for three inches and nearly to face in depth, and extending three feet in length. On opposite edge one inch of wane one-half inch deep and running out two feet from the end from which it starts. No other defects.

Example 9. Piece 1x8-12. Drop Siding. Has one red, sound, firmly-set spike knot running from edge two inches toward the center of the piece and located four feet from the end. One three-fourth-inch black knot six inches from end, and seven black knots from one-half to three-eighths of an inch in diameter. All sound, firmly set and well scattered. No other defects. Face and edges smooth and well milled.

Example 10. Piece 1x8-12. Drop Siding. Has one one-and-one-fourth-inch red knot near center and fourteen red knots from one-eighth to one-half inch, well scattered. All knots sound and firmly set. Good edges and smooth appearance.

Example 11. Piece 1x8-16. Drop Siding. Has five red knots and eight black knots, all sound, firmly set and well scattered over face of piece. For four feet on one end there is five inches of water stain of a brown color, but it is as hard and firm as any part of the piece. No other defects.

Example 12. Piece 1x10-10. S. 1 S. Has five three-fourth-inch and two one-half-inch red knots, and three one-fourth-inch black knots, all sound, firmly set and well scattered over face of piece. Slight traces of water stain for three feet on half length of piece. No other defects. Smooth face and edges.

Example 13. Piece 1x10-16. S. 1 S. Has one three-fourth-inch, two one-half-inch and five small pin knots, all black, sound, firmly set and well scattered over one-half the length of the piece. No other defects.

Example 14. Piece 1x12-12. S. 1 S. Has one three-fourth-inch knot eight inches from one end, one three-fourth-inch knot two feet from same end, one one-half-inch knot four feet from other end, and two one-half-inch knots near center; all black, sound and firmly set. There are five season checks from four to six inches long for six feet on back, but they are narrow and do not go through to face.

Example 15. Piece 1x12-16. Contains six one and three-fourth-inch red knots and fourteen red knots from one inch to one-half inch in diameter; all sound and firmly set, evenly scattered over the face of the piece. Edges smooth and face has smooth, tight appearance.

Example 16. Piece 1x12-16. Has fourteen sound, firmly-set red knots from one and one-fourth inch to pin knots, well scattered over face. No other defects. Edges smooth.

Example 17. Piece 1x12-16. S. 2 S. Three inches from one end, ten inches from the other end, and in the center of the board respectively, are three one-and-one-fourth-inch red knots, well scattered lengthwise; and near the center of the piece crosswise are two one-inch and two three-fourth-inch red knots. All knots sound and firmly set. No other defects.

NO. 1, OR COMMON.

1. The grade of No. 1, or Common, in boards or strips includes stock of a generally sound character.
2. Some shake is admissible.
3. Numerous knots, whether red or black.
4. An occasional knot hole in a smooth-appearing piece, or a wide, smooth piece two or three small holes.
5. Some water stain of a firm character.

EXAMPLES.

Example 1. Piece 1x6-16. No. 1. D. & M. Shows a half-inch knot hole three feet from end, also two half-inch edge knots sloughed off, but not leaving holes. There are twelve other knots one inch and less in diameter, two having unsound centers. With these defects it still retains a good appearance.

Example 2. Piece 1x6-16. No. 1, D. & M. Shows considerable shell shake for three feet at one end; at other end machine has gouged out a piece one-half inch deep and two inches in diameter. There are also two one-half inch black knots near center.

Example 3. Piece 1x8-14. No. 1, S. 1 S. Has four sound red knots averaging one and one-half inches in diameter; six sound red knots under one inch in diameter; all well scattered; one unsound black knot one inch in diameter, one foot from end, and three feet from same end a knot hole one inch in diameter. With the exception of this end, the piece has a very sound, smooth appearance. No shake.

Example 4. Piece 1x8-12. No. 1, Shiplap. There are nine sound red knots one and one-quarter inches and less in diameter scattered over the face. Machine has gouged a hole three-quarters by one and one-half inch on one edge near end, and a small amount of shake appears near end.

Example 5. Piece 1x8-12. No. 1, S. 1 S. Has six black knots three-quarters to one inch in diameter and three three-eighth-inch black knots, also two feet of shake at one end.

Example 6. Piece 1x8-12. No. 1, Shiplap. Shows a two and one-half-inch sound red knot at one end, at center a one-half-inch knot hole. Directly opposite this knot hole the machine tore out on edge a piece one-half inch deep by two inches long, and within four feet from other end are three black knots, one being one inch in diameter and two three-quarters inch in diameter; also shows three short season checks.

Example 7. Piece 1x10-16. No. 1, Shiplap. Is peppered with red and black knots one and one-half inches and less in diameter over the entire face. One three-quarter-inch knot is unsound; two inches deep along one edge for eight feet is tight shake, and the opposite edge shows nearly as much. Piece very smooth in appearance.

Example 8. Piece 1x10-16. No. 1, S. 1 S. A discoloration or water stain is shown over the face of this piece for four feet at one end and spots of stain over balance of face. Also local shake in two places. Piece has the general appearance of a select.

Example 9. Piece 1x10-16. No. 1. Shows heart shake for five feet along the center, four cross or horn knots one by three inches and three feet from end a thin spot one foot long that machine could not surface.

Example 10. Piece 1x10-16. No. 1, S. 1 S. Has six black knots three-quarters inch and less in diameter. One sound red knot one and one-half inches in diameter, and a spot of hard rot two by eight inches that does not go through.

Example 11. Piece 1x12-16. No. 1, S. 1 S. Shows shell and heart shake in spots the entire length, but shake does not extend through the board. Also several horn knots that are small and sound. General appearance good.

Example 13. Piece 1x12-16. No. 1, S. 1 S. Shows numerous small red and black knots scattered over face. Two one-half-inch black knots have fallen out, but piece is so smooth in appearance it will stand the holes.

No. 2, OR SHEATHING.

1. Boards or strips will admit of considerable shake.
2. Black, unsound knots.
3. Two or three good-sized knot holes, or more of small ones.
4. Streaks or patches of discoloration, showing partial decay.
5. The grade can be safely recommended for ordinary sheathing or roof boards.

EXAMPLES.

Example 1. Piece 1x6-16. No. 2, D. & M. Has been badly torn by machine in four or five places; otherwise sound.

Example 2. Piece 1x6-12. No. 2, D. & M. Has one-inch edge knot-hole near one end, two three-fourth inch knot holes three feet from same end and a three-fourth inch loose knot twelve inches from hole, and at other end an inch loose black knot.

Example 3. Piece 1x8-16. No. 2, Shiplap. Within four feet of one end shows two one-half inch knot-holes, also small piece broken out on edge by machine; at other end a three-fourth inch knot-hole. Balance of piece a sound, knotty appearance.

Example 4. Piece 1x8-14. No. 2, Shiplap. Has shell shake for three feet at one end, two feet of shell shake at center, a one and one-half-inch knot hole four feet from other end and two one-half-inch black knots.

Example 5. Piece 1x8-16. No. 2, D. & M. For three feet at one end is an extensive shell or cross shake, also an inch hole on edge torn by machine. At center a two-inch loose, black knot; at the other end a one and one-fourth inch unsound knot.

Example 6. Piece 1x8-14. No. 2, Rough. Has three one-inch knot-holes within eight feet; two black three-fourth-inch knots at center and two feet of shake at end.

Example 7. Piece 1x10-12. No. 2, Shiplap. Has extensive shake half the width of piece the entire length. No other imperfection excepting a few sound red knots.

Example 8. Piece 1x10-16. No. 2, S. 1 S. Shows extensive shake for four feet near center, several coarse sound knots and stain over one-half of piece.

Example 9. Piece 1x10-14. No. 2 Rough. Has a two and one-half-inch knot-hole two feet from end, and one and one-half-inch black knot alongside of it. At other end a two-inch unsound knot and a small amount of shell shake through center of board.

Example 10. Piece 1x12-16. No. 2, S. 1 S. Has a straight split two feet long, at one end from which extend red streaks two inches wide by three feet long at center; a two-inch black unsound knot, with four feet of very tight shake at other end.

Example 11. Piece 1x12-14. No. 2, Rough. Within four feet from one end are eight black knots one inch and less in diameter. One one-inch knot-hole; an open season check eighteen inches long. At other end shell shake for three feet and three-fourths inch black knots.

No. 3, OR CULL BOARDS AND STRIPS.

1. This is the lowest grade made in hemlock.
2. The defects may consist of very excessive shake.
3. Badly shattered stock.
4. Very coarse, unsound knots.
5. A great deal of rot.
6. Excessive cross checks.

EXAMPLES.

Example 1. Piece 1x8-16. No. 3. Has three three-inch knot holes within six feet from end. Three large, coarse knots and two black unsound knots.

Example 2. Piece 1x8-14. No. 3 Rough. Has three large rotten knots, two inches and over in diameter; one edge knot-hole and back of board is two-thirds slab.

Example 3. Piece 1x8-14. No. 3, Rough. Is streaked with rotten sap. Is coarse-knotted, badly checked and one-half inch of edge split off for three feet.

Example 4. Piece 1x10-16. No. 3. On one side shows extensive soft rot two-thirds its entire length and streaked with rot on other side.

Example 5. Piece 1x10-16. No. 3, Rough. Contains all the defects known to hemlock, rot, shake, coarse knotted, and yet can be used as a whole.

Example 6. Piece 1x12-14. No. 3, Rough. Is badly shattered by shake from end to end. Also coarse knotted and streaked with rot.

Example 7. Piece 1x12-16. No. 3, Rough. Is excessively cross checked.

PIECE STUFF OR DIMENSION.

No. 1 DIMENSION.

The grade of No. 1 Dimension will admit of shake that will not materially affect the strength of the piece.

Also knots either black or red, that are well located and fairly sound.

Or a knot hole that will not impair its strength.

Or some slight cross checks, or sound water stain.

This grade while admitting the above defects must at the same time retain the element of strength required for any ordinary building purposes.

EXAMPLES.

Example 1. Piece 2x4-12. No. 1. Shows heart shake along one edge for half length and one foot of same on other side of same face; two sound branch knots, three-fourths inch wide.

Example 2. Piece 2x4-12. No. 1. Shows shake running along one face with grain for nearly its entire length; does not show on other face and therefore strong enough for building purposes.

Example 3. Piece 2x4-16. No. 1. With exception of extensive stain on one side and five very small, round knots, the piece is perfect.

Example 4. Piece 2x4-16. No. 1. One side is perfect. On the other, six worm-holes and somewhat checked, but does not affect the strength of piece.

Example 5. Piece 2x4-16. No. 1. Has six sound, black knots, well scattered; one is two inches in diameter; two are one and one-half inches in diameter and balance are less than one inch. While the knots are black, they are firm, well set and piece considered sound.

Example 6. Piece 2x8-16. No. 1. Shows five one-inch black knots, and two one and one-half inch red knots, all running through the piece and well scattered. On one edge for four feet, at one end is wane one-half inch by three-fourths inch deep.

Example 7. Piece 2x8-12. No. 1. Shows a streak of red stain half its length on one side only. Two sound red knots two inches in diameter, four feet apart, and one and one-half inch knot sloughed off one edge.

Example 8. Piece 2x8-14. No. 1. Shows a straight split for two feet at one end and at other end shake for three feet on one side only; otherwise sound.

Example 9. Piece 2x8-14. No. 1. Has one and one-half-inch round knot-hole across one edge one foot from end, also one two-inch and three one and one-quarter inch sound, red knots, well scattered. No other defects.

Example 10. Piece 2x8-16. No. 1. Shows heart shake and numerous small, sound red knots for entire length of one side; otherwise perfect.

Example 11. Piece 2x12-12. No. 1. Shows shell shake four inches by three feet on one side, a straight split on one end one foot long; one three-quarter inch unsound knot and two black knots one inch in diameter.

Example 12. Piece 2x12-14. No. 1. At four feet from one end has one and three-quarter inch knot-hole on one edge, and on opposite edge three feet of tight shake; otherwise perfect.

Example 13. Piece 2x12-14. No. 1. Shows considerable tight shake for six inches over two-thirds its face; also one black horn knot one-half by three-quarters inch near center. Shake does not go through and piece has strength to carry it.

Example 14. Piece 2x12-16. No. 1. Has five black knots one and one-half inches in diameter and four one-half inch black knots. One of the largest knots unsound; also numerous checks six inches long, lengthwise of the piece. While it shows many defects, it is strong enough for any building purpose, but simply on appearance would be considered a line piece.

Example 15. Piece 2x12-16. No. 1. Shows shake over entire face for full length, very little of it going through; several small, sound, red knots.

Example 16. Piece 2x12-14. No. 1. Has a select appearance and nearly perfect. Shows no defects except a short, straight check at one end.

No. 2 DIMENSION.

The grade of No. 2 in dimension includes stock not good enough to be classed as No. 1, and the defects admissible are of the same general character as the defects found in No. 1, except that they are more pronounced.

It is the lowest grade recommended for ordinary building purposes.

Considerable shake, large unsound knots, loose knots, knot-holes, and cross checks are all admissible in this grade, but not a serious combination of these defects in any one piece.

This grade can be recommended for cheap construction in small buildings.

EXAMPLES.

Example 1. Piece 2x4-16. No. 2. Shows four feet of rot on both sides, but not so extensively as to materially weaken the piece. Otherwise sound.

Example 2. Piece 2x4-16. No. 2. Shows rot on one side for two and one-half feet and a large coarse branch knot that weakens it too much for No. 1.

Example 3. Piece 2x4-16. No. 2. Is a heart piece and shows shake along one edge nearly the entire length. At one end shake shatters it enough to weaken piece somewhat.

Example 4. Piece 2x4-16. No. 2. Shows wane across the piece three-quarters inch deep on one side for five feet.

Example 5. Piece 2x6-16. No. 2. Shows some shake for two feet at one end and one-half dozen small sound red knots scattered over the face, and streak of firm, hard rot two to three inches wide running for three feet in length. This rot shows through on both sides and one edge.

Example 6. Piece 2x6-16. No. 2. Has ten coarse knots from one and one-half to two inches in diameter, well scattered. One knot-hole one and one-half inches in diameter on edge and shows shell shake over two-thirds of face.

Example 7. Piece 2x8-12. No. 2. Has a two and one-half inch knot-hole in center, four feet from end, and one face shows shell shake for four feet.

Example 8. Piece 2x8-12. No. 2. Has extensive shake five feet from one end and seven small sound black knots. If it were not for the character of the shake, which is crosswise of the piece, and weakens it, it would be considered a good No. 1.

Example 9. Piece 2x10-14. No. 2. Shows moderately tight shake for one-half its length and on one side three feet from end, wane, three inches wide, three-quarter inch deep extending for three feet. It is graded down strictly on account of appearance.

Example 10. Piece 2x12-16. No. 2. At one foot from end on one edge shows a hole one by three inches where knot is sloughed off on one side. At center two knot-holes one foot apart, and one and one-half inches in diameter. There are also five small sound red knots and two feet of shake.

CULL PIECE STUFF.

This grade can not be recommended for ordinary construction.

The defects are very excessive shake, or badly shattered stock, numerous knot holes, very large, coarse, rotten knots, or considerable rot.

EXAMPLES.

Example 1. Piece 2x4-12. No. 3. Has four very coarse knots and one and one-half inch knot-hole and considerable rot at one end. There is no strength to the piece.

Example 2. Piece 2x6-16. No. 3. Has three two-inch rotten knots with holes part way through from one face; on the other side considerable soft rot for half the length of the piece.

Example 3. Piece 2x6-16. No. 3. Has a straight split at one end for six feet. The remainder of the piece is badly shattered with shake.

Example 4. Piece 2x6-14. No. 3. Within four feet of one end has a knot-hole so large as to leave only three inches of lumber. Is extremely shaky and otherwise weakened by defects.

Example 5. Piece 2x6-12. No. 3. Has a combination of coarse knots, and open shake to such an extent as to weaken it for anything but temporary building purposes.

Example 6. Piece 2x8-16. No. 3. Contains soft rot over one face for six feet and is extremely shaky.

Example 7. Piece 2x12-16. No. 3. Shows open shake for one-half its face for full length and balance of the piece shows extensive water stain.

Example 8. Piece 2x12-16. No. 3. Shows a dozen large, coarse knots, a great deal of shake and extensive rot three to six inches wide running through the piece.

Official Weights of White Cedar Posts and Poles Adopted by the Northwestern Cedarmen's Association.

Revised January 7, 1902.

SAWED POSTS.

7 to 9 inch Quarters, 7 feet.....	15 lbs.
5 inch Halves, 7 feet.....	15 lbs.
6 inch Halves, 7 feet.....	20 lbs.
7 inch Halves, 7 feet.....	28 lbs.

ROUND POSTS.

Size at top.	3-in.	4-in.	5-in.	6-in.	7-in.	8-in.
7 feet long.....	15	22	30	45	60	70
8 feet long.....	..	30	40	50	70	85
10 feet long.....	..	40	50	65	80	100
12 feet long.....	..	50	65	80	100	...
14 feet long.....	..	65	80	100	130	...
16 feet long.....	..	80	100	125	155	...
18 feet long.....	..	90	120	140	185	...
20 feet long.....	..	100	130	175	210	...
25 feet long.....	..	150	200	250	350	...
30 feet long.....	275	350	450	...
35 feet long.....	450	600	...
40 feet long.....	625	800	...
45 feet long.....	835	1000	...
50 feet long.....	1035	1250	...
55 feet long.....	1300	1550	...
60 feet long.....	2000	...
65 feet long.....	2700	...
70 feet long.....	3400	...

SHINGLE WEIGHTS.

Extra *A* White Cedar Shingles, 200 lbs. per M.
Standard *A* White Cedar Shingles, 200 lbs. per M.

Rules for Grading Fir, (Oregon Pine), Spruce, Red Cedar Lumber and Hemlock. Adopted March 30, 1906, by The Oregon Lumber Manufacturers' Association; Pacific Coast Lumber Manufacturers' Association; Southwestern Washington Lumber Manufacturers' Association.

STANDARD PATTERNS.

On the following pages are shown the standard stock patterns adopted by the three Associations for the manufacture of Flooring, Ceiling, Partition, Drop Siding and Rustic.

FLOORING.

1	x3.	Finish	.....	13-16x2 $\frac{1}{4}$	face
1	x4.	Finish	.....	13-16x3 $\frac{1}{4}$	face
1	x6.	Finish	.....	13-16x5 $\frac{1}{8}$	face
1 $\frac{1}{4}$	x4.	Finish	.....	1 1-16x3 $\frac{1}{4}$	face
1 $\frac{1}{4}$	x6.	Finish	.....	1 1-16x5 $\frac{1}{8}$	face

CEILING.

$\frac{3}{8}$ x4.	Finish	.....	5-16x3 $\frac{1}{4}$	face
$\frac{3}{8}$ x6.	Finish	.....	5-16x5 $\frac{1}{8}$	face
$\frac{1}{2}$ x4.	Finish	.....	7-16x3 $\frac{1}{4}$	face
$\frac{1}{2}$ x6.	Finish	.....	7-16x5 $\frac{1}{8}$	face
$\frac{5}{8}$ x4.	Finish	.....	9-16x3 $\frac{1}{4}$	face
$\frac{5}{8}$ x6.	Finish	.....	9-16x5 $\frac{1}{8}$	face
1x4.	Finish	.....	$\frac{3}{4}$ x3 $\frac{1}{4}$	face
1x6.	Finish	.....	$\frac{3}{4}$ x5 $\frac{1}{8}$	face

PARTITION.

1x4.	Finish	$\frac{3}{4}$ x3 $\frac{1}{4}$	face
1x6.	Finish	$\frac{3}{4}$ x5 $\frac{1}{8}$	face

SHIPLAP.

Shiplap	7 in.	face
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DROP SIDING.

1x4.	Drop Siding.	Finish.....	$\frac{3}{4}$ x3 $\frac{1}{4}$	face
1x6.	Drop Siding.	Finish.....	$\frac{3}{4}$ x5 $\frac{1}{8}$	face

RUSTIC.

1x6.	Channel.	Finish.....	$\frac{3}{4}$ x5 $\frac{1}{8}$	face
1x8.	Channel.	Finish.....	$\frac{3}{4}$ x7	face
1x6.	V Finish.....		$\frac{3}{4}$ x5 $\frac{1}{8}$	face
1x8.	V Finish.....		$\frac{3}{4}$ x7	face

All 6-inch stock to finish 5 $\frac{1}{8}$ face and 8-inch stock 7-inch face.

STANDARD SIZES FOR DRESSED LUMBER.

In the absence of special agreement between the buyer and seller for each order, all dressed lumber is finished to the following sizes:

Dimension,
S1S1E
or S4S—

Shop Common,
S2S—

2x 4 to 1 $\frac{5}{8}$ x 3 $\frac{5}{8}$
2x 6 to 1 $\frac{5}{8}$ x 5 $\frac{5}{8}$
2x 8 to 1 $\frac{5}{8}$ x 7 $\frac{1}{2}$
2x10 to 1 $\frac{5}{8}$ x 9 $\frac{1}{8}$
2x12 to 1 $\frac{5}{8}$ x11 $\frac{1}{2}$
3x 6 to 2 $\frac{1}{2}$ x 5 $\frac{1}{2}$
3x 8 to 2 $\frac{1}{2}$ x 7 $\frac{1}{2}$
3x10 to 2 $\frac{1}{2}$ x 9 $\frac{1}{2}$
3x12 to 2 $\frac{1}{2}$ x11 $\frac{1}{2}$
4x 4 to 3 $\frac{1}{2}$ x 3 $\frac{1}{2}$
4x 6 to 3 $\frac{1}{2}$ x 5 $\frac{1}{2}$

Common Boards—

Shiplap—

Flooring, Ceiling,
Partition,
Drop Siding,
Shiplap,
Rustic—

1 in. to 13-16 in.
1 $\frac{1}{4}$ in. to 1 5-32 in.
1 $\frac{1}{2}$ in. to 1 13-32 in.
2 in. to 1 25-32 in.
3 in. to 2 25-32 in.

S1S or S2S to $\frac{3}{4}$ in

S1S or S2S to $\frac{3}{4}$ in

Timbers,
S1S1E
or S4S—

6x6 and larger, $\frac{1}{2}$ -
inch off each way.

See diagram of Stand-
ard Patterns on an-
other page.

**Finishing,
S1S or S2S—**

1	in. to	13-16 in.
1¼	in. to	1 1-16 in.
1½	in. to	1 5-16 in.
2	in. to	1¾ in.

**If Dressed on one
or both edges—**

4	in. to	3¾ in.
6	in. to	5½ in.
8	in. to	7½ in.
10	in. to	9½ in.
12	in. to	11¼ in.
14	in. to	13 in.
16	in. to	15 in.

Bevel Siding—

6 in.—3-16 in. thin edge,
½ in. thick edge, 5½
in. wide.
4 in.—Same thickness,
3½ in. wide.

Pickets—

1¼ in. square. 1 1-16x1 1-16 in. S4S.
1½ in. square. 1 5-16x1 5-16 in. S4S.
1x3 flat, ¾x2½. S4S.

Wagon Bottoms—

Finished sizes 13-16
and 17-16x38 in. and
42 in. face.

Standard Lath—

⅓ in. x 1½ x 4 ft.

GENERAL INSTRUCTIONS.

All lumber is graded with special reference to its suitability for the use intended.

With this in view each piece is considered and its grade determined by its general character, including the sum of all its defects.

What is known as "yard lumber," such as Dimension, Common Boards, Finish, etc., is graded from the face side, which is the best side, except that lumber which is dressed one side only is graded from the dressed side.

Factory lumber which is used for the manufacture of Doors, Sash, etc., and must show on both sides, is always graded from the poorest side. The grade is determined by the quantity of clear cuttings obtainable in each piece.

Defects in lumber are to be taken in connection with the size of the piece, and for this reason wider and longer pieces will carry more defects than smaller pieces in the same grade.

Grade of lumber is determined at time of shipment and can not be reconsidered after further working.

A shipment of any grade must consist of a fair average of that grade, and can not be made up of an unfair proportion of the better or poorer pieces that would pass in that grade.

Material not conforming to standard sizes shall be governed by special contract.

Standard lengths for all lumber are multiples of 2 feet, except that the standard lengths for Flooring, Ceiling, Siding, Rustic and Finish are multiples of 1 foot, and odd or fractional lengths shall be counted as of the next higher even length.

All dressed lumber shall be measured and sold at the full size of the rough material used in its manufacture.

All lumber one inch or less in thickness shall be counted as one inch.

DEFECTS.

Recognized defects are knots, knot-holes, splits, checks, wane, rot, rot-streaks, worm holes, pitch seams, pitch pockets, torn or chipped grain, discoloration and imperfect manufacture.

Knots shall be classed as sound or loose as to quality and large or small as to size.

Splits and Checks shall be considered as to length and direction.

Wane is bark or lack of wood on edges of lumber from any cause.

Pitch Seams are clearly defined openings between the grains of the wood, are generally filled with granulated pitch, and a serious defect and not admissible in any grade above No. 2 Common.

Pitch Pockets are openings between the grains of the wood containing more or less pitch, and are surrounded by sound grain wood.

Torn or Chipped Grain is usually caused by dressing against the grain and is more or less of a defect according to its depth or extent.

Discoloration may be the result of various causes and will only be considered a defect when it will damage the piece for use intended.

MISCELLANEOUS.

Defects in rough stock caused by improper manufacture and drying will reduce the grade, unless they may be removed by dressing such stock to standard size.

Imperfect manufacture in dressing stocks, such as torn grain, broken knots, mismatching, insufficient tongue or groove on Flooring, Ceiling, Drop Siding, etc., shall be considered defects and will reduce the grade accordingly as they are slight or serious

in their effect on the use of the stock. Pieces of either Flooring, Ceiling, Drop Siding, etc., having less than 3-16 inch of tongue will not be admitted in any grade above No. 3 Clear. Pieces with 3-16 inch or more of tongue will be admitted in any grade.

In all grades of Flooring, Ceiling, Drop Siding, etc., wane on the reverse side not exceeding one-third the width and one-sixth the length of any piece, provided the wane does not extend into the tongue, is admissible.

FIR.

Fir, otherwise known as Oregon Pine, or Douglas Fir, is a wood adapted to many uses. It is the strongest soft wood known and for this reason is especially useful for bridge timbers and framing lumber of all kinds. Being hard it makes the best soft wood floor. Owing to its handsome color and grain, and being susceptible of a high polish, it is extensively used for Finish.

Fir is sawn and sorted with reference to the direction of the grain. The "Edge Grain" (called E. G. in these rules and in all price lists) has the grain at or nearly at right angles with the face of the board, and is adapted to Flooring, Stepping, etc., because it does not "sliver" with wear. Flat Grain (F. G.) means that the grain is parallel or nearly parallel with the face of the board. Flat Grain is selected for finish because of the beauty of the wood in this form.

NAMES AND GRADES.

Flooring—No. 1 Clear E. G., No. 2 Clear E. G., No. 3 Clear E. G., No. 1 Clear F. G., No. 2 Clear F. G., No. 3 Clear F. G.

Ceiling—No. 1 Clear, No. 2 Clear, No. 3 Clear.

Partition—No. 1 Clear, No. 2 Clear, No. 3 Clear.

Drop Siding and Rustic—No. 1 Clear, No. 2 Clear, No. 3 Clear.

Bevel Siding—No. 1 Clear, No. 2 Clear, No. 3 Clear.

Stepping—No. 1 Clear E. G., No. 2 Clear E. G.

Finishing—No. 1 Clear, No. 2 Clear, No. 3 Clear.

Tank Stock—No. 2 Clear and Better.

Wind Mill Stock—Selected Common.

Turned Porch Columns—One Grade only.

Common Boards—One grade only.

Fencing—One grade only.

Shiplap—One grade only.

Joists and Scantling—One grade only.

Timbers—One grade only.

Battens—One grade only.

Wagon Bottoms—One grade only.

Pickets—Square or Flat—One grade only.

Car Materials—Sills, Decking, Framing, Lining, Siding and Roofing.

FLOORING.

No. 1 Clear—Edge Grain, 3, 4 and 6 inch. Shall be well manufactured and free from all defects. Angle of grain not less than 45 degrees.

No. 2 Clear—Edge Grain, 3, 4 and 6 inch. Shall be well manufactured; angle of grain not less than 45 degrees. Will admit of slight roughness in dressing and from one to three small close pitch pockets, or equivalent defects.

No. 3 Clear—Edge Grain, 3, 4 and 6 inch. Angle of grain not less than 45 degrees. Will admit of roughness in dressing, two or three small knots not over three-fourths inch in diameter or eight small pitch pockets, any three of which may be open. It is generally understood that this grade will admit such defects or combination of defects as will not impair its utility for cheap floors.

No. 1 Clear—Flat Grain, 3, 4 and 6 inch. Shall be free from all defects; well manufactured, and all flat grain.

No. 2 Clear—Flat Grain, 3, 4 and 6 inch. Shall be well manufactured and flat grain; will admit of slight roughness in dressing. Either of the following also permitted with the above: three close pitch pockets not to exceed two inches each in length; three small, tight, smooth knots one-half inch in diameter, or their equivalent of combined defects.

No. 3 Clear—Flat Grain, 3, 4 and 6 inch. Will admit of roughness in dressing; four small knots not over three-quarter inch in diameter, or eight small pitch pockets, any three of which may be open, or without above defects, three knots not over one inch in diameter, or the equivalent of combined defects.

It is generally understood that this grade will admit such other defects or combination of defects as will not impair its utility for cheap floors and sheathing.

CEILING.

No. 1 Clear—4 and 6 inch. Shall be strictly clear, well manufactured. Both edge and flat grain admissible.

No. 2 Clear—4 and 6 inch. Shall be well manufactured. Will admit of slight roughness in dressing. Either of the following also permitted with the above: three close pitch pockets, not to exceed 2 inches in length; three small, tight, smooth knots, or their equivalent of combined defects. Both edge and flat grain admissible.

No. 3 Clear—4 and 6 inch. Allows any three of the following defects: 25 per cent. of the face may be rough from dressing; 4-inch stock admits of not to exceed six tight knots three-quarters inch in diameter or two knots one inch in diameter, or three open pitch pockets not to exceed four inches each in length or an equivalent number of tight pitch pockets. 6-inch is correspondingly graded with proportionately greater defects. Both edge and flat grain admissible.

PARTITION.

Four and six inch. Shall be graded same as Ceiling on the face side, with the reverse side not more than one grade lower.

PORCH DECKING.

Shall be graded the same as Drop Siding.

DROP SIDING AND RUSTIC.

No. 1 Clear—4, 6 and 8 inch. Shall be well manufactured and free from all defects. Both edge and flat grain stock admissible.

No. 2 Clear—4, 6 and 8 inch. Shall be well manufactured. Slight roughness in dressing admissible; will allow three small tight knots not more than one-half inch in diameter or four tight pitch pockets, or their equivalent of combined defects.

No. 3 Clear—4, 6 and 8 inch. Will admit of roughness in dressing, four or five knots not larger than one inch in diameter or eight small pitch pockets, any three of which may be open, or their equivalent of combined defects.

BEVEL SIDING.

No. 1 Clear—4 and 6 inch. Shall be practically free from defects, will admit of very slight defects on thin edge, which will cover when laid.

No. 2 Clear—4 and 6 inch. Will admit of slight defects in dressing or two close pitch pockets or other minor defects, but each piece shall be suitable for use the full length without waste.

No. 3 Clear—4 and 6 inch. Will admit of small sound knots, small pitch pockets, roughness in dressing, or other recognized defects, but not to exceed four of any of the said defects or their equivalent in any one piece.

STEPPING.

No. 1 Clear—8 to 14 inch. Shall be well manufactured, edge grain, angle to be not less than 45 degrees.

No. 2 Clear—8 to 14 inch. Shall be well manufactured, edge grain, angle of grain not less than 45 degrees. Will allow slight roughness in dressing and four close pitch pockets or equivalent defects.

FINISH, CASE AND BASE.

No. 1 Clear—4 to 12 inch. Shall be free from all defects on one side, any grain admissible.

No. 2 Clear—4 to 12 inch. Shall be well manufactured, allowing slight roughness in dressing. Will admit three tight knots, not over one-half inch in diameter, or three close pitch pockets not over two inches in length or their equivalent of combined defects.

No. 3 Clear—4 to 12 inch. Will admit of roughness in dressing, four small knots not over three-quarter inch in diameter, or eight small pitch pockets, any three of which may be open, or without the above defects, three knots not over one inch in diameter or the equivalent of small knots or other defects.

The above rules for Stepping and Finish are based on stock 8 inches to 10 inches in width, and sixteen feet in length. Wider stock in Stepping and Finish to take proportionately greater defects.

Straight splits or checks not exceeding the width of the piece are admissible.

TANK STOCK.

May be either vertical or slash grain; must be water-tight the full length of the piece unless it is for cutting stock. Small knots, or pitch pockets which do not go through the piece, not to be considered defects. Edges to be practically clear or to contain no defects that will prevent a water-tight joint when worked.

Two-inch stock to contain practically no sap. Three-inch stock, when 12 inches wide, to allow three inches of sap on both edges of face side, not to extend over three-quarters of an inch throughout the piece.

SELECTED COMMON.

Two by four to 2x12 and 3x4 to 4x6 shall be square-edged; will admit any quantity of sound knots not over one-inch in diameter, or small pitch pockets not over four inches in length. Sizes larger than 4x6 will admit sound knots not to exceed one and one-half inches in diameter; pitch pockets not to exceed six inches in length.

It is understood that this is Selected Common, a grade lower than No. 3 Clear and not to be confused with it.

WIND-MILL TOWER STOCK.

Shall be graded as selected common. Shall be S. 4 S. or S. 1 S. & E. one-half inch scant each way.

FENCING.

Common Fencing must be manufactured from sound stock; may contain sound knots equal in diameter to not over one-third of the width of the piece, or spike knots the length of which is not over one-half the width of the piece. May contain wane one-half inch deep on edge, for one-half the length of any piece measured on one side.

COMMON BOARD AND SHIPLAP.

Common boards S. 1 S. and Common Shiplap shall be manufactured from sound stock. Will admit of any two of the following defects: Wane one-half inch deep on edge and one-sixth of the length of any piece, tight, sound knots, none of which shall be larger than three inches in diameter, or equivalent spike knots, one split not more than sixteen inches long. These boards should be firm and sound, suitable for use in ordinary construction and serviceable without waste. Roughness in dressing admissible.

JOISTS AND SCANTLING.

Common Fir Joists and Scantling must be of good, sound character; will admit of coarser knots than one-inch common. Some wane edge admissible. Generally speaking, there should be no imperfections that seriously impair the strength of the piece.

TIMBERS, ROUGH.

Rough timbers 4x4 and larger shall not be more than one-quarter inch scant when green, and be evenly manufactured from sound stock, and must be free from knots that will materially weaken the piece.

Timbers 10x10 in size may have a 2-inch wane on one corner, or its equivalent on two or more corners one-fourth the length of the piece. Other sizes may have proportionate defects. Season checks and checks extending not over one-eighth the length of the piece admissible.

TURNED PORCH COLUMNS.

No. 1 Column to grade 80 per cent. clear; the balance of 20 per cent. to admit of the following slight defects: Three small sound knots not over three-quarters of an inch in diameter on the smooth part of the turned shaft, or on the square; or three tight pitch pockets to be not over three inches long, or the equivalent in both knots and pitch pockets. Bright sap shall be no defect. The 5x5 and the 6x6 shall be bored through with not less than a 1¾-inch bit. The 4x4 to be bored through the square ends at the option of the manufacturer. The Colonial Columns shall be bored through with not less than a 2-inch bit.

WAGON BOTTOMS.

To be graded the same as No. 2 Flooring.

CAR MATERIAL.

It is generally understood that Car material is sold under special contract between buyer and seller. In the absence of such agreement the following rules shall govern:

Car Lines and End Plates—Yellow or Red Fir, free from all defects except sound knots and pitch pockets.

Car Decking and Flooring—Yellow or Red Fir, free from splits, shakes, waney edges or unsound knots. Will admit pitch pockets and sound knots.

Riser Blocks and Deck Beams—Yellow or Red Fir, free from splits and shakes. Will admit pitch pockets and live knots.

Car Fascia—Yellow or Red Fir, free from shakes, splits or waney edges. Will admit sound knots or tight pitch pockets.

Car Posts, Braces, Girths, Side and End Rails—Yellow or Red Fir, free from splits or waney edges. Will admit sound knots and pitch pockets.

Inside Lining for Stock and Box Cars—Yellow or Red Fir, to be of sound, common lumber. Will admit sound knots and pitch pockets.

Car Purlines for Roofs, Roof Ribs, Ground Moulding, Furring, Blocks, Ribs over Doors, Fascia, Saddle Blocks, Roof Clamps, Roof Strips, Door Tracks, Base Strips and Ridge Poles—Yellow or Red Fir, free from splits or waney edges. Will admit sound knots and tight pitch pockets.

Car Roofing—To be graded the same as T. & G. flooring.

Car Siding—To be graded the same as T. & G. flooring.

Car Sills—To be of sound Yellow or Red Fir, square edges and straight grain. Will admit pitch pockets and sound knots that do not impair strength of piece.

Car Running-Boards and Saddle-Boards—Yellow or Red Fir, free from splits and waney edges. Will admit sound knots and pitch pockets.

Selected Common Car Stock—Shall be graded according to the rules for Selected Common.

Ties—Shall be sound common lumber.

Stringers—Shall be sound common lumber, free from large, unsound knots or knots in clusters, or other defects that will materially weaken the piece.

FACTORY LUMBER.

Select and Better—This grade shall consist of all lumber containing more than 80 per cent. of clear cuttings of the sizes ordinarily used in the manufacture of doors.

No. 1 Shop—Shall be eight inches and wider, excepting that 6-inch pieces containing one or more door stiles are admissible. This grade shall contain not less than 50 per cent. nor more than 80 per cent. of clear cuttings of sizes ordinarily used in the manufacture of doors.

No. 2 Shop—Shall be of the same widths as No. 1 Shop, and shall contain not less than 25 per cent. nor more than 50 per cent. of clear cuttings of sizes ordinarily used in the manufacture of doors.

1-Inch Shop—There shall be but one grade of 1-inch shop. Each piece must contain not less than 50 per cent. of clear cuttings six-inch and wider and three feet and longer.

TURNING SQUARES.

No. 1—May contain any defects that will dress or turn off, and may also contain defects that will cover with paint, such as sound knots or hard pitch pockets. If surfaced, size shall be reduced one-quarter inch for each side dressed.

SPRUCE.

Description.

Spruce is a soft, white wood, both odorless and tasteless in nature. It takes paint freely, consequently has few equals for bevel siding, finish, sash and door stock and many other specialties.

General Instructions.

Spruce lumber shall be graded and classified according to the following rules and specifications as to quality, and dressed stock shall conform to the table of standard sizes, except where otherwise expressly stipulated between buyer and seller.

There being but a limited amount of sap wood in spruce, bright sap in any grade shall not be a defect.

Names and Grades.

Flooring.—Clear. —A— —B—.
Finish.—First and Second Clear. Third Clear. Selects.
Ceiling.—Clear. —A— —B—.
Partition.—Clear. —A— —B—.
Porch Decking.—Shall be graded same as flooring.
Wainscoting.—Shall be graded same as ceiling.
Bevel Siding.—Clear. —A— —B— —C—.
Selects and Better.—No. 1 Shop. No. 2 Shop.
Moulding Stock.—
Turning Squares.—No. 1.
Box Lumber.—No. 1. No. 2. No. 3.

FLOORING.

Clear.—Shall be free from all defects on face.

—A—Will admit two slight defects in dressing or three close pitch pockets, not to exceed two inches in length.

—B—Will admit of slight roughness in dressing, or four close pitch pockets, not to exceed three inches in length, or two small sound knots, not to exceed one-half inch in diameter.

FINISH.

First and Second Clear.—Being the highest grade in Spruce finish shall be free from serious defects and capable of use for finishing work without waste.

May be of any width or length, and if under ten inches in width shall be free from defects. If ten inches or over, will admit slight defects, such as roughness in dressing.

Third Clear.—Will admit of sound knots not over one-half inch in diameter, slight roughness in dressing, small close pitch pockets, or other minor defects. In widths under twelve inches there shall not be more than three of said defects to any one piece.

Selects.—Will admit of sound knots up to one inch in diameter, roughness in dressing, close pitch pockets not over four inches long, or other proportionate defects. In widths twelve inches or less there shall not be more than four of the said defects to any one piece.

CEILING.

Clear.—Shall be practically free from all face defects.

—A—Will admit of two slight dressing defects, or close pitch pockets, not to exceed a combined length of six inches.

—B—Will admit slight roughness in dressing or close pitch pockets not to exceed a combined length of twelve inches, or two sound knots, not exceeding one-half inch in diameter.

PARTITION.

Shall be graded same as ceiling on face side, with the reverse side not more than one grade lower.

PORCH DECKING.

Shall be graded same as flooring.

WAINSCOTING.

Shall be graded same as ceiling.

BEVEL SIDING.

Clear.—Shall be practically free from defects; will admit of very slight defects on thin edge which will cover when laid.

—A—Will admit of slight defects in dressing, or two close pitch pockets, or other minor defects, but each piece shall be suitable for use the full length without waste.

—B—Will admit of knots up to one-half inch in diameter, small pitch pockets, roughness in dressing or other recognized defects, not to exceed four of any said defects, or their equivalent, in any one piece.

—C—Will admit all siding below a —B— grade, and may contain any of the recognized defects, provided any piece can be used for the purposes intended, with a waste not exceeding 15 per cent.

SELECTS AND BETTER.

This grade shall consist of all lumber containing more than 80 per cent. of clear cuttings of the sizes ordinarily used in the manufacture of doors.

No. 1 Shop.—Shall be eight inches and wider, excepting that six-inch pieces containing one or more stiles are admissible. This grade shall contain not less than 50 per cent. nor more than 80 per cent. clear cuttings of the sizes ordinarily used in the manufacture of doors.

MOULDING STOCK.

Shall consist of lumber ten to eighteen feet in length; suitable for ripping moulding strips from one inch to six inches wide. May contain defects, such as pitch pockets and splits, running lengthwise of the piece, or other recognized defects.

This grade shall contain not less than 60 per cent. of rippings, running one inch and wider, ten feet and longer, 25 per cent. of which should average three inches and wider, and 80 per cent. be twelve feet and longer.

RED CEDAR.

Red Cedar is too well known to require a particular description here. The trade throughout the United States is acquainted with this wood in the form of shingles.

As far as decay is concerned, red cedar is the most lasting of woods. For this reason it is especially adapted for shingles, siding and all outside finish, as well as for many special uses.

BEVEL SIDING.

Clear—4 or 6 inch, must be strictly clear except an occasional strip of white sap not over one-half inch in width on thin edge. Grain of all grades will be as lumber runs.

—A—4 or 6 inch. The following defects will be allowed, but only two in any one piece: One and one-half-inch sap on thin edge, one-half-inch sap on thick edge. Slight roughness in dressing, or equivalent defects.

—B—4 or 6 inch. All bevel siding that falls below the requirements of **—A—** and otherwise comes within the following rules will be in this grade: Roughness in dressing, sap full width of face. It is generally understood that this grade will admit such other defects as will not impair its utility for cheap siding. Defects that can be cut at a loss of not to exceed 20 per cent. of the board will be allowed.

CEILING.

To be graded the same as Fir ceiling.

FINISH.

No. 1.—4 or 6 inch. Must be strictly clear both sides; 8 inch must be clear on face side, excepting one inch sap or one small knot on reverse side; 10 and 12 inch must be strictly clear on face side, except one inch sap on face side or two small knots on reverse side; 14-inch width proportionately more defects.

No. 2—4 to 8 inch. Allows the equivalent of 1-inch sap or two small knots; 10 and 12 inch allow equivalent of two inch sap or four small knots; 14 inch and wider allows proportionately more defects.

CORRUGATED DECKING.

No. 2 and Better.—Must be graded same as Fir ceiling.

FLOORING.

To be graded same as Fir flat-grain flooring.

HEMLOCK.

Western Hemlock is a wood well adapted to many uses. It is strong, holds nails well, and therefore makes good framing lumber for all purposes. It is hard and wears well as flooring. It is easily dressed to a smooth surface, and takes a fine polish, which together with the beauty of the grain and color makes a fine interior finish.

The Western Hemlock is entirely free from the "wind shake" so common in the Hemlock of the East.

This lumber has been sold in the East under various names, such as Alaska Pine, Columbia Pine, Gray Fir, Washington Pine, etc., and has given good satisfaction.

In a general way the rules for grading Fir and Spruce are applied to Hemlock.

Pacific Coast Lumber Manufacturers' Association.

STANDARD OFFICIAL RULES FOR GRADING FIR AND RED CEDAR LUMBER.

(Rail Shipment.)

January 27, 1905.

FINISHED SIZES OF FIR AND CEDAR LUMBER.

Flooring.—1x4 and 1x6 shall be finished to 13-16x3¼ and 13-16x5¼; 1¼-inch to 17-16.

Finish.—1 inch to be S. 4 S. or S. 2 S. to 13-16, 1¼-inch to 17-16, 1½-inch to 21-16, 2-inch to 13¼. When dressed on edge ½-inch scant.

Ceiling.—¾-inch to be finished to 5-16, ½ to 7-16, ⅝ inch to be finished to 9-16 and 1 inch to be finished to 11-16. Width same as flooring.

Fir Drop Siding, Shiplap, Common Boards and Fencing.—Shall be finished to ¾-inch in thickness. Drop siding same width as flooring.

Dimension.—2x4 shall be S. 1 S. and E. to 1⅝x3⅝, 2x6 S. 1 S. and E. to 1⅝x5⅝, 2x8 S. 1 S. and E. 1⅝x7½, 2x10 S. 1 S. and E. to 1⅝x9½, 2x12 S. 1 S. and E. to 1⅝x11½, 4x4, 5x5, 6x6 or 3x8 and up shall be S. 1 S. or S. 4 S. ½-inch scant each way.

Bevel Siding.—4-inch shall be surfaced to 3-16 on thin edge and ½-inch on thick edge 3½ inches in width, 6-inch shall be same thickness as 4-inch, and 5½ inches in width.

Fir Lumber.

All lumber shall be trimmed square, with fine saws, on both ends, and cut to even lengths. Rules based on sixteen-foot lengths.

Flooring, ceiling, drop siding, bevel siding, stepping and all finishing lumber under twelve inches in width shall be kiln dried.

Fir Flooring No. 1.—Clear, edge grain 4 to 6 inch, shall be free from all defects and well manufactured and vertical grain. Angle of grain not less than 45 degrees.

Fir Flooring No. 2.—Edge grain 4 or 6 inch. Shall be well manufactured, vertical grain, angle of grain to be not less than 45 degrees. Will admit of slight roughness in dressing, bright sap one quarter of the width of the face. One of the following is also permitted, with one of the above two defects: three close pitch seams not to exceed two inches in length.

Fir Flooring No. 1.—Slash grain 4 or 6-inch. Shall be free from all defects, well manufactured, all slash grain. Bright sap admissible not to exceed 1 inch on the face. No other defects allowed.

Fir Flooring No. 2.—Slash grain 4 or 6-inch. Shall be well manufactured and slash grain. Will admit of slight roughness in dressing, bright sap one-half of the width of the face. The following is also permitted, with one of the above two defects: three close pitch seams not to exceed two inches in length; three small, tight, smooth knots one-half inch in diameter.

Fir Flooring No. 3.—4 or 6-inch. All edge or slash grain flooring that falls below the requirements of No.2, and otherwise comes within the following rules, will be put in this grade: will admit of slight roughness in dressing, sap, two or three small knots not over three quarter inch in diameter, six to eight small pitch pockets, any three of which may be open, or without above defects two knots one inch in diameter. It is generally understood that this grade will admit such other defects as will not impair its utility for cheap floors. Defects that can be cut out at a loss not to exceed 20 per cent. of the board will be allowed.

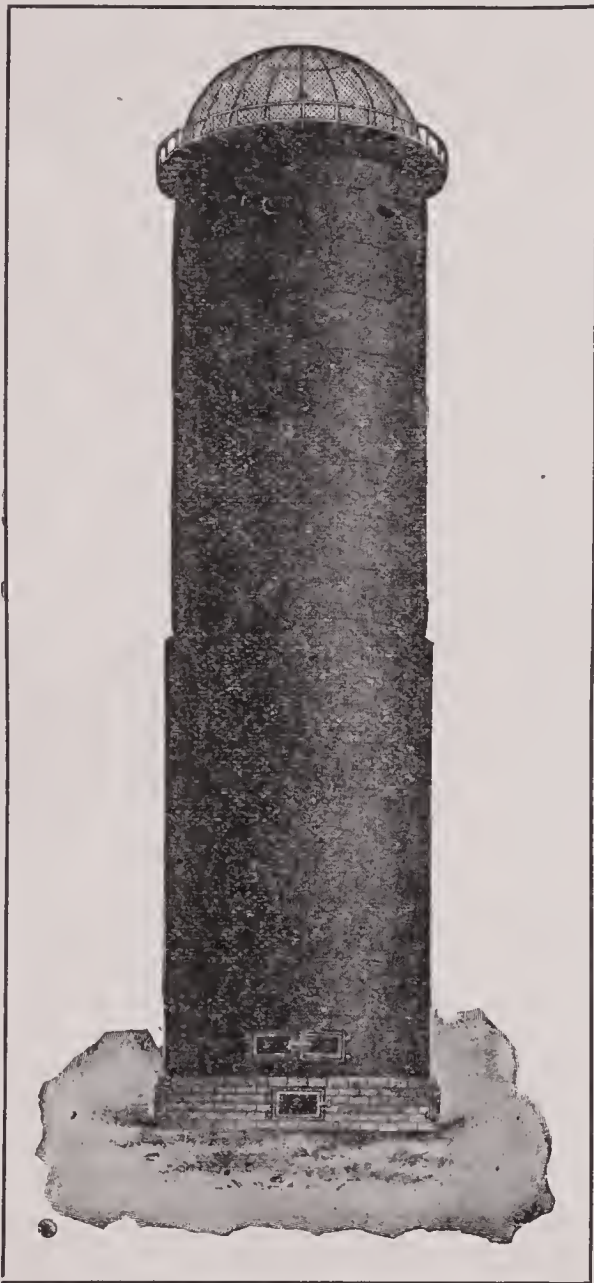
Fir Ceiling No. 1.—4 or 6 inch. Shall be strictly clear, well manufactured, no sap allowed. Both vertical grain and slash grain admissible.

Fir Ceiling No. 2.—4 or 6 inch. Allows any two of the following defects: Slight roughness in dressing admissible, bright sap one-half the width of the face, three tight pitch seams or one open pitch pocket not over four inches long, or two small, tight knots three-quarter-inch in diameter, or one smooth knot not over one inch in diameter. No other defects allowed. Both vertical grain and slash grain admissible.

Fir Ceiling No. 3.—4 or 6 inch. Allows any three of the following defects: 25 per cent. of the face may be rough from dressing; bright sap full width of face; 4-inch stock admits of not to exceed six tight knots three-quarter inch in diameter, or two knots one inch in diameter, or three open pitch pockets, not to exceed four inches in length, or an equivalent number of tight pitch seams. Six-inch correspondingly graded with proportionally more defects. Both vertical and slash grain is admissible.

The MacKinnon Mfg. Co.

BAY CITY, MICHIGAN



**Marine and Mill
Boilers
Engines
and Machinery**



We are the Originators of the

WATER SPACE BURNER

We Also Build Brick-Lined Burners

Fir Drop Siding No. 1.—6-inch. Shall be well manufactured. Bright sap one-quarter width of face. We aim to put only slash grain in this stock.

Fir Drop Siding No. 2.—6-inch. Shall be well manufactured. Slight roughness in dressing admissible. Shall allow three small tight knots not more than one-half inch in diameter, or four tight pitch pockets.

Fir Drop Siding No. 3.—6-inch. All drop siding that falls below the requirements of No. 2, or otherwise comes within the following rules will be put in this grade: Will admit of roughness in dressing, sap entire width of face, four or five knots not larger than 1 inch in diameter, or pitch pockets equal to above defects. Slightly loose knots not over three quarter-inch in diameter allowed. Knot holes not admissible.

Fir Partition.—4 or 6-inch. Shall be graded same as ceiling on the face side with the reverse side not more than one grade lower.

Fir or Cedar Wainscoting No. 1.—3 to 6 feet. Must be free from all defects, and must be well manufactured. Either slash or vertical grain admissible.

Fir or Cedar Wainscoting No. 2.—3 to 6 feet. Bright sap across face no defect. Slight roughness in dressing admissible. With any of the above defects two small sound knots not more than three-quarter-inch in diameter are admissible.

Fir Casing, Base or Jamb.—Shall be graded on the merits of the face side, same as ceiling. Short lengths should show no defects on the face side in No. 1.

Fir Siding No. 1.—8 to 10-inch. Clear. Shall be well manufactured, vertical grain, angle of which must not be less than 45 degrees. No other defects allowed.

Twelve-inch, clear, vertical grain. Shall allow one inch sap on edge next to riser.

Fourteen-inch clear, vertical grain will allow very slight roughness in dressing. Bright sap not to exceed one and a half inches on edge next to riser. May have two close pitch seams.

Fir Stepping No. 2.—8 to 10-inch. Same as No. 1 clear, except will allow slight roughness in dressing. Sap one and one-half inches on one face. Four close pitch seams two inches long.

Twelve-inch will admit sap two inches wide, or three knots or pitch pockets not over four inches long, also slight roughness in dressing.

Fourteen-inch will admit sap two inches wide, three knots or five pitch pockets not over four inches in length, also slight roughness in dressing.

Fir Finish No. 1.—4 to 8-inch. Shall be free from all defects on one side. Ten and 12-inch will allow sap not to exceed two inches on face. We aim to put slash grain only in this stock, and in case vertical grain is desired, special contract must be made. These rules apply to all grades of Fir Finish.

Fir Finish No. 2. 4 to 8-inch. Must be well manufactured except slight roughness in dressing. Two-inch bright sap on face side admissible. Will admit of two or three close pitch seams not over two inches in length. Ten and 12-inch proportional amount of defects allowed.

Fir Finish No. 3.—4 to 8-inch. Shall be well manufactured. Will admit of following defects: Slight roughness in dressing, bright sap one-quarter width of face in 8 and 10-inch and one-half width of face in 12-inch and wider. Will also admit of four or five pitch seams not over two and a half inches in length.

Fir Wagon Bottoms.—To be graded same as No. 2 drop siding.

Fir Common Boards and Shiplap.—Common boards S. 1 S. and common shiplap shall be manufactured from sound stock, of even thickness the entire length. Will admit of any two of the following defects: Wane one-half inch deep on edge, and one-sixth of the length of any piece; tight, sound knots, none of which shall be larger than three inches in diameter, or equivalent spike knots; one split not more than sixteen inches long, and blue sap. These boards should be firm and strong, suitable for use in all ordinary construction and serviceable without waste. Roughness against grain done in dressing is admissible.

Fir Fencing S. 1 S.—Common fencing must be manufactured from sound stock. May contain sound knots equal in diameter to not over one-third of the width of the piece at any given point throughout its length, but must be free from spike knots the length of which is not over one-half the width of the piece. Also free from wane over one-half-inch deep on edge or one-half the length of any piece measured on one side.

Fir Piece Stuff S. 1 S. and E.—Common piece stuff must be of good, sound character; will admit of coarser knots than 1-inch common. Some wane edge is admissible; also sap. Generally speaking, there should be no imperfections that seriously impair the strength of the piece.

Fir Rough Timbers.—6x6 and larger, shall not be more than one-quarter-inch scant when green, and be evenly manufactured from sound stock, with not less than three square edges, and must be free from knots that will materially weaken the piece.

Timbers 10x10 in size may have a 2-inch wane on one corner, or its equivalent on two or more corners, one-fourth the length of the piece. Other sizes may have proportionate defects. Seasoning checks and checks extending not over one-eighth of the length of the piece are admissible.

Fir Tank Stuff.—May be either vertical or slash grain. Must be water-tight the full length of piece, unless it is for cutting stock. Small knots or pitch seams which do not go through the piece not to be considered defects. Edges to be practically clear, or to contain no defects that will prevent a water-tight joint when worked. Two-inch stock to contain practically no sap. Three-inch stock, when twelve inches wide, to allow three inches of sap on both edges of face side, not to extend over three-quarters of an inch through the piece.

Fir Wind-Mill Tower Stock.—Shall be graded as a selected common; must contain no large or unsound knots that will materially weaken the piece for the purposes required. Sap no defect. Shall be S. 4 S. or S. 1 S. and E., one-half-inch scant each way.

CAR STOCK SPECIFICATIONS.

Car Lines and End Plates.—Yellow fir, free from all defects, except sound live knots one inch or less in diameter, and pitch seams not over four inches in length.

Car Decking, Flooring, Riser Blocks and Deck Beams.—Yellow or red fir, free from all defects, except pitch seams four or five inches in length, and sound live knots one and a half inches or less in diameter.

Car Fascia.—Yellow or red fir, free from all defects, except sound live knots three-quarters of an inch or less in diameter.

Car Posts, Braces, Girths, Side and End Rails.—Yellow fir, must be free from all defects, except sound live knots three-quarter inch or less in diameter, and pitch seams four inches or less in length.

Inside Lining in Box and Stock Cars.—Yellow or red fir, free from all defects, except pitch seams five or six inches in length, and sound live knots one and a half inches or less in diameter, and sap one-third the width of board.

Car Purlines for Roofs, Roof Ribs, Ground Moulding, Furring Blocks, Ribs Over Door, Fascia, Saddle Blocks, Roof Clamps, Roof Strips, Door Tracks, Base Strips and Ridge Poles.—Yellow fir, free from all defects, except sound live knots three-quarters of an inch or less in diameter, and sap in moderate amount.

Car Roofing, No. 1.—Free from all defects, 50 per cent. to run vertical grain.

Car Roofing, No. 2.—Slash or vertical grain, dry sap no defect; will allow one or two sound knots a half-inch or less in diameter.

No. 1 and No. 2 Clear Vertical Grain Car Siding.—Will allow three or four tight pitch pockets, not over three inches long, and sap not to exceed one-third the width of board—this to each ten lineal feet.

No. 1 and 2 Clear Slash Grain Car Siding.—Sap no defect. Will allow three or four small pitch pockets or two small sound knots not over half-inch in diameter to each ten lineal feet.

Car Sills.—Red or yellow fir. Will allow pitch seams five inches in length and sound live knots one and a half inches or less in diameter, well scattered. Sills to be free from cross grain, or any defects impairing it for use intended.

Car Running-Boards and Saddle-Boards.—Yellow or red fir, free from all defects, except sound live knots one inch or less in diameter, or sap one-fourth the width of the board.

Red Cedar Lumber.

Red Cedar Bevel Siding No. 1.—4 or 6-inch. Must be strictly clear, except an occasional strip of white sap not over one-half inch in width on thin edge. Grain of all grades will be as lumber runs.

Red Cedar Bevel Siding No. 2.—4 or 6-inch. The following defects will be allowed, but only two in any one piece: One and one-half inch sap on thin edge, one-half-inch sap on thick edge. Slight roughness in dressing. One of the following defects also permitted with one of the four above mentioned: Two hard sound knots one-half-inch in diameter.

Red Cedar Bevel Siding No. 3.—4 or 6-inch. All bevel siding that falls below the requirements of No. 2 and otherwise comes within the following rules will be in this grade: Roughness in dressing, sap full width of face, two sound knots not exceeding one-half inch in diameter, or one loose knot one-half inch in diameter. It is generally

understood that this grade will admit such other defects as will not impair its utility for cheap siding. Defects that can be cut out at a loss of not to exceed 20 per cent. of the board will be allowed.

Red Cedar Ceiling.—To be graded the same as fir ceiling.

Red Cedar Finish No. 1.—4 or 6-inch. Must be strictly clear both sides, 8-inch must be clear on face side, excepting one inch sap or one small knot on reverse side. Ten and 12-inch must be strictly clear on face side, excepting one inch sap on face side or two small knots on reverse side; 14 to 18-inch proportionally more defects.

Red Cedar Finish No. 2.—4 to 8-inch. Allows the equivalent of one inch sap or two small sound knots; 10 and 12-inch allow equivalent of two-inch sap or four small sound knots; 14 to 18-inch allows proportionally more defects. Both slash grain and vertical grain admissible.

Red Cedar Corrugated Decking and Porch Flooring No. 2 and better.—Must be graded same as fir ceiling.

Red Cedar Wainscoting.—To be graded same as fir wainscoting.

Spruce Grading Rules.

Description.—Spruce is a soft white wood, both odorless and tasteless in nature. It takes paint freely, consequently has few equals for bevel siding, finish, sash and door stock, and many other specialties.

No arbitrary rules for the inspection of this lumber can be maintained with satisfaction. The variations from any given rule are numerous, and suggested by practical common sense, so nothing more than the general features of the different grades will be attempted by rules of inspection.

GENERAL INSTRUCTIONS.

Spruce lumber shall be graded and classified according to the following rules and specifications as to quality, using 16-foot lengths as a basis, and dressed stock shall conform to the subjoined table of standard sizes, except where otherwise expressly stipulated between buyer and seller.

All lumber shall be trimmed square and cut to even lengths.

A grade with separately defined defects may be considered in combinations of such defects, not to exceed the number specified.

Wider and longer stock admits of more defects than narrower and shorter lumber in the same grade.

Finishing lumber is always graded from the face, or the best side.

Lumber for cutting purposes is graded from the poorest side, and grade is based upon the quantity of clear cuttings obtainable.

Lumber sold rough must be accepted on grade as shown in the rough, and is not subject to any change in grade which may be caused by subsequent mill work.

There being but a limited amount of sap wood in spruce the admission of bright sap in any grade shall not be a defect.

DRESSED SIZES.

Flooring.—1x4 and 1x6 shall be finished 13-16x3¼ inch and 5¼ inch, 1¼ inch to 17-16 inch, flat back.

Finish.—1-inch S. 2 S. to 13-16 inch, 1¼ inch S. 2 S. to 17-16 inch, 1½ inch S. 2 S. to 21-16 inch, 2 inch S. 2 S. to 1¾ inch. Lumber dressed on edges if eight inches or less in width, to be half inch less when finished. If ten or twelve inches to be three-quarters of an inch less, and fourteen or sixteen inches to be one inch less than rough width.

Ceiling 5⁄8 inch to be finished 9-16 inch, ¾ inch to be finished 11-16 inch. Width same as flooring.

Partition.—1 inch to be finished 12-16 inch.

Porch Decking.—To be finished 12-16 inch.

Bevel Siding.—4 inch and 6 inch shall be surfaced to 3-16 inch on thin edge and half inch on thick edge. Three and a half inches and five and a half inches in width respectively.

Factory Lumber.—1¼ inch S. 2 S. to 1 5-32 inch, 1½ inch S. 2 S. to 1 13-32 inch, 2 inch S. 2 S. to 1 25-32 inch, 2½, 3 and 4 inch S. 2 S. ¼ inch less rough.

Moulding Stock.—1 inch S. 1 S. to 7⁄8 inch, 1 inch S. 2 S. to 13-16 inch.

FLOORING.

Clear.—Shall be free from all defects on face.

"A."—Will admit two slight defects in dressing or three close pitch seams, not to exceed two inches in length.

"B."—Will admit of slight roughness in dressing, or four close pitch seams, not to exceed three inches in length, or two small sound knots, not to exceed one-half inch in diameter.

FINISH.

First and Second Clear.—Being the highest grade in Spruce finish, shall be free from serious defects and capable of use for finishing work without waste.

May be of any width or length, and if under ten inches in width, shall be free from defects. If ten inches or over, will admit slight defects, such as roughness in dressing.

Third Clear.—Will admit of sound knots not over one-half inch in diameter, slight roughness in dressing, small close pitch seams, or other minor defects. In widths under twelve inches there shall not be more than three of said defects to any one piece.

Selects.—Will admit of sound knots up to one inch in diameter, roughness in dressing, close pitch seams not over four inches long, or other proportionate defects. In widths twelve inches or less there shall not be more than four of the said defects to any one piece.

CEILING.

Clear.—Shall be practically free from all face defects.

"A."—Will admit of two slight dressing defects, or close pitch seams, not to exceed a combined length of six inches.

"B."—Will admit slight roughness in dressing or close pitch seams, not to exceed a combined length of twelve inches, or two sound knots not exceeding one-half inch in diameter.

PARTITION.

Shall be graded same as ceiling on face side, with the reverse side not more than one grade lower.

PORCH DECKING.

Shall be graded same as flooring.

WAINSCOTING.

Shall be graded same as ceiling.

BEVEL SIDING.

Clear.—Shall be practically free from defects. Will admit of very slight defects on thin edge which will cover when laid.

"A."—Will admit of slight defects in dressing, or two close pitch seams not over two inches in length, or other minor defects, but each piece shall be suitable for use the full length without waste, containing no defects that will not cover with paint, making a smooth surface.

"B."—Will admit of knots up to one-half inch in diameter, small pitch pockets, roughness in dressing, or other recognized defects, not to exceed four of any of the said defects, or their equivalent, in any one piece.

"C."—Will admit all siding below a "B" grade, and may contain any of the recognized defects; provided, any piece can be used for the purposes intended with a waste not exceeding 15 per cent.

FACTORY LUMBER.

Grades as described under this head are valued for cutting up qualities only, and should not be confounded, either in quality or value, with grades outlined for yard purposes.

Factory lumber of all kinds shall be graded for the percentage of clear door cuttings obtainable.

Factory lumber shall be eight inches and wider, and eight to twenty feet long.

Select and Better.—This grade shall consist of all lumber containing more than 80 per cent. of clear cuttings of the sizes ordinarily used in the manufacture of doors.

No. 1 Shop Common.—Shall be eight inches and wider, excepting that six-inch pieces containing one or more stiles are admissible.

This grade shall contain not less than 50 per cent. nor more than 80 per cent. clear cuttings of the sizes ordinarily used in the manufacture of doors.

No. 2 Shop.—Shall be of same widths as No. 1, and shall contain not less than 25 per cent. or more than 50 per cent. clear cuttings of sizes ordinarily used in the manufacture of doors.

Inch Shop Common.—There shall be but one grade of inch shop common. Each piece must contain not less than 50 per cent. of cuttings six inches and wider, three feet and longer.

MOULDING STOCK.

Shall consist of lumber ten to eighteen feet in length, suitable for ripping moulding strips from one inch to six inches wide. May contain defects, such as pitch seams and splits, running lengthwise of the piece, or other recognized defects.

This grade shall contain not less than 60 per cent. of rippings, running one inch and wider, ten feet and longer, 25 per cent. of which should average three inches and wider, and 80 per cent. to be twelve feet and longer.

TURNING SQUARES.

No. 1 Turning Squares.—May contain any defects that will dress or turn off; may also contain defects that will cover with paint, such as sound knots, or hard pitch seams. If surfaced, the size shall be reduced one-quarter inch for each side dressed.

Clear Car Siding.—Will admit small tight pitch seams, sound knots up to one-half inch in diameter, or slight roughness in dressing, which will cover with paint, making a smooth surface.

BOX LUMBER.

The value and grade of this lumber is determined from its adaptability for the manufacture of ordinary packing boxes. Ordinary sizes being defined as boxes not over twenty inches in length nor more than fifteen inches in width. Wide boards, or those of special widths, will admit more defects than narrow or random widths. It is not intended that boxes shall be clear, and defects that do not impair the strength or the usefulness of ordinary boxes are not considered, except that if the cuttings are of better quality, a smaller percentage will be accepted in each grade.

There shall be three recognized grades of box lumber, i. e., No. 1, No. 2 and No. 3.

No. 1.—Shall be generally sound and contain from 75 to 90 per cent. of cuttings, suitable for boxes of ordinary sizes and quality, as referred to above. In computing percentages cuttings of assorted sizes shall be used. Assorted sizes to be defined as pieces running in widths from six inches to twelve inches, and in lengths twelve inches to twenty inches.

No. 2.—Generally similar in character to No. 1, containing from 60 to 75 per cent. of box cuttings.

No. 3.—Shall consist of all lumber below a grade of No. 2, and shall contain 40 to 60 per cent. of box cuttings.

Pacific Coast Lumber Manufacturers' Association Bureau of Inspection.

EXPORT GRADING RULES.

Notes to Surveyors.

SALE MEASURE.

All fractional lengths shall be measured as of contents of next longer length unless otherwise instructed by loading mill.

All lumber sawn less than one inch in thickness shall be measured as of one inch, i. e., at surface measure.

All rough lumber one inch and over in thickness shall be measured at board measure contents.

All worked or surfaced lumber shall be measured at the board measure contents before working.

Sizes four inches and under in thickness or six inches and under in width will be worked one-eighth inch less for each side or edge surfaced.

Sizes over four inches in thickness or over six inches in width, will be worked one-quarter inch less for each side or edge surfaced.

Tongued and grooved, surfaced one side, will be worked one-eighth inch less in thickness and five-eighth inch narrower on face.

Above references being to "green" lumber, the worked sizes, if of partially or wholly seasoned lumber, will be proportionately less, as determined by the shrinkage.

Surveyor, on completion of loading, shall furnish an inspector's certificate, sworn to before a notary public, certifying as to the character of the shipment.

RULES.

MERCHANTABLE.

This grade shall consist of sound, strong lumber, free from shakes, large, loose or rotten knots and defects that materially impair its strength; well manufactured and suitable for good substantial constructional purposes.

Will Allow:

Occasional variations in sawing or occasional scant thicknesses, sound knots, pitch seams and sap on corners one-third the width and one-half the thickness. Defects in all cases to be considered in connection with the size of the piece and its general quality.

EXTRA MERCHANTABLE

This grade applies only to sizes less than six inches in thickness and / or sixteen inches in width and / or forty feet long.

It shall follow the rule for grade of merchantable, but sap and heart centers shall be considered defects.

COMMON (No. 2).

This grade shall consist of lumber having knots, sap and other defects which exclude it from grading as Merchantable, but of a quality suitable for rough kinds of work.

SELECTS.

Shall be sound, strong lumber, well sawn.

Will Allow:

In sizes 6x6 and less, knots not to exceed one inch in diameter, sap on corners one-fourth the width and one-fourth the thickness, small pitch seams when not exceeding six inches in length.

In sizes over 6x6, knots not to exceed two inches in diameter, varying according to the size of the piece; sap on corner not to exceed two inches on both face and edge; pitch seams not to exceed six inches in length.

Defects in all cases to be considered in connection with the size of the piece and its general quality.

CLEARs.

Edge Grain Clears in widths twelve inches and wider, shall show edge grain on face for at least three-quarters of width, and otherwise free from defects on one face and two edges.

Other Clears shall be sound lumber, well sawn, one side and two edges free from knots and other defects impairing its use for the purpose intended.

Will Allow

In dimensions two inches and less in thickness of contents, twenty-four inches or less to the linear foot.

Narrow pitch seams not over four inches long, when not extending through the piece and small knots when appearing on one side only.

Small amount of light-colored sap when not exceeding one-eighth the width or one-fourth the length.

In dimensions three inches to six inches thick, six inches to ten inches wide.

Narrow pitch seams not over six inches long on one side or edge.

Light-colored sap not exceeding one-fourth face or edge or half the length.

Knots not exceeding one inch in diameter when on one side and lower half of edges.

In dimensions larger than above.

Pitch seams when not extending through the piece.

Light-colored sap on corners not exceeding three inches on face and edge.

Knots two inches and less in diameter, according to size of piece, when on one face and one-half of each corresponding edge, leaving one face and upper half of each edge clear.

SHIP PLANK.

Including outboard planking, garboards, wales, clamps, rails and lumber for similar purposes, shall be close-grained lumber, free from large knots or other defects impairing its use for the purposes required.

Will Allow

Sap on edges not exceeding one-fourth the face and one-third the length.

Sound hard knots not exceeding one-fourth inch in diameter when not on corners or calking portion of edges.

Pitch seams if narrow and not extending through the piece.

DECK PLANK.

Shall be uniformly sawn, close-grained and free from knots and defects on one face and calking edges. Flat sizes shall show edge grain on broad face.

Will Allow

Sap on corners of upper side not exceeding one-fourth face width or one-third length.

Sound hard knots not exceeding one inch in diameter on lower side and lower half of calking edge.

FLOORING.

Fir Flooring No. 1.—Edge grain shall be free from all defects and well manufactured. Angle of grain not more than 45 degrees.

Fir Flooring No. 1.—Slash grain, shall be well manufactured and free from all defects except occasional slight roughness in dressing.

Fir Flooring No. 2.—Shall be well manufactured, both edge and slash grain. Will admit of slight roughness in dressing, bright sap one-half of the width of the face. One of the following is also permitted with one of above two defects: Three close pitch seams not to exceed two inches in length; three tight smooth knots each not more than three-quarters of an inch in diameter. Based on sixteen-foot lengths.

CEILING.

Fir Ceiling No. 1.—Shall conform to the grade of No. 1 slash grain flooring.

STEPPING No. 1.

This grade shall show edge grain on face to extent of not less than three-quarters of width and be free from defects on face and edges, and shall conform generally to grade of "Clears."

STEPPING NO. 2.

This grade shall show edge grain on face to extent of not less than half its width and conform generally to grade of "Selects."

RUSTIC.

Rustic No. 1 shall conform to the grade of No. 1 slash grain flooring.

Rustic No. 2 shall conform to the grade of No. 2 flooring.

PORT PIRIE MINING TIMBER.

This grade shall consist of sound lumber free from shakes, splits and rotten knots. Will allow occasional variations in sawing.

RAILROAD TIES.

Must be of sound live timber, free from shakes, splits and large knots where the rails lie. Will allow occasional variations in sawing.

PICKETS.

Pickets 1"x3"—4'—4'6"—5' will allow variation in size from one-eighth of an inch in thickness and one-eighth of an inch in width. Sap and two sound hard knots not over three-quarters of an inch in diameter allowed.

STAVES.

Staves 1"x3"x4'. Sawn full size clear. If seasoned will allow one-eighth of an inch scant in width.

LATH.

Lath, three thicknesses to one inch. Will allow sap.

DOMESTIC GRADING RULES.**Notes to Surveyors.****SALE MEASURE.**

All intermediate (odd or fractional) lengths shall be measured as of the contents of the next longer length, unless otherwise especially instructed by the proper parties.

All lumber sawn less than one inch in thickness shall be measured as of one inch (i. e., at surface measure).

All rough lumber one inch and over in thickness shall be measured at board measure contents.

All worked lumber shall be measured at board measure contents **before** working.

Sizes 4 inches and under in thickness will be worked one-eighth inch less for each side surfaced. Sizes over 4 inches in thickness will be worked one-fourth inch less for each side surfaced.

T. & G. S. 1 S. shall be worked one-eighth inch less in thickness and five-eighth inch narrower on face.

All sizes are subject to natural shrinkage, whether "green" partially or wholly seasoned, and in such cases the surveyor will make allowance for variations from above.

RECOGNIZED DEFECTS

Are Knots, Knot-holes, Splits (either from seasoning, ring heart or rough handling), Shakes, Wane, Red-heart, Rot, Rotten Streaks, Worm-holes, Pitch-seams, Pitch-pockets, Solid Pitch, Chipped Grain, Torn Grain, Loosened Grain, Seasoning Checks, and Black Sap.

Knots

Shall be classified as Pin, Small, Standard and Large as to size; Round and Spike as to form; and Sound, Loose, Encased, Pith and Rotten as to quality.

A Pin knot is sound and not over one-half inch in diameter.

A Small knot is sound and not over one inch in diameter.

A Standard knot is sound and not over one and one-half inches in diameter.

A Large knot is sound, and any size over one and one-half inches in diameter.

A Round knot may be oval or circular in form, and the mean or average diameter shall be considered in applying these rules.

A Spike knot is one sawn in a lengthwise direction.

A Sound knot is one solid across its face, as hard as the wood it is in, and so fixed by growth or position that it will retain its place in the piece.

A Loose knot is one not held firmly in place by growth or position.

An Encased knot is one surrounded wholly or in part by bark or pitch.

A Pith knot is a small, sound knot with a pith hole not more than one-fourth inch in the center.

A rotten knot is one not as hard as the wood it is in.

Pitch.

Seams are opening between the grain of wood containing more or less pitch and shall be classified as large and small.

A Large pitch seam is one one-eighth inch and over in open width, and not over eight inches in length.

A small pitch seam is one less than one-eighth inch in open width, and not exceeding four inches in length.

A Pitch pocket is a well-defined accumulation of pitch at one point of the piece.

A pitch seam or pocket showing open on both sides of the piece one-eighth inch or more in width shall be considered the equivalent of a knot-hole.

Grain.

Chipped grain consists of a part of the surface being chipped or broken out in small particles below the surface, but shall not be classed as torn grain.

Torn grain consists of a part of the wood being torn out in dressing, usually around knots or curly places.

Loosened grain consists of the point of one grain being torn loose from the next grain, noticeable on the heart side of a piece.

Sap.

Colored; blue or black.

Bright sap shall not be considered a defect unless the surveyor shall receive from the supervising inspector, or both buyer and seller, contrary instructions.

Sundries.

Firm re dheart shall not be considered a defect in any of the grades of Commons.

Occasional variations in sawing, or occasional scant thickness, shall not be considered a defect when not rendering the piece unfitted for its probable use.

Imperfect manufacture in dressed stock, such as Chipped grain, Torn grain, Loosened grain, Broken knots, Mismatching, or Insufficient tongue or groove will reduce the grade, according to whether such defects are slight or serious, in their effect upon the use of the piece.

Equivalent, in the application of these rules, means that the defects allowed, whether specified or not, are understood to be equivalent in damaging effect to those specially mentioned.

The grades of all regular stock shall be determined by the number, character and position of defects visible in any piece. The enumerated defects permissible in any grade are intended to be descriptive of the coarsest piece such grade may contain hereunder; the average quality of the grade should be about midway between such piece and the coarsest piece allowed in the next higher grade.

DOUGLAS FIR.

Grades.

Shall be known and designated as follows:

Rough and Worked Commons—"Merchantable," "Seconds," "Refuse."

Rough Uppers—"Clear," "Select." Car stock: "No. 1," "No. 2." Ship Stuff: "No. 1," "No. 2."

Worked Uppers—D. & M. Flooring: "No. 1," "No. 2," "No. 3." Stepping: "No. 1," "No. 2," "No. 3." Rustic: "No. 1," "No. 2," "No. 3." Ceiling: "No. 1," "No. 2," "No. 3."

Rough Commons.

MERCHANTABLE.

This grade shall consist of lengths 10 feet and over (except shorter lengths be ordered) of sound, strong lumber, free from loose or rotten knots, knot-holes, splits, shakes, wane, rot, pitch-seams (open on both sides of the piece), or other defects that materially impair the strength of the piece; well manufactured, and suitable for good substantial construction purposes, or the purpose for which it is intended.

Will Allow:

Occasional variations in sawing, or occasional scant thicknesses.

Sound large knots.

Large pitch seams.

Bright or colored sap on corners one-third the width and one-half the thickness.

Firm red heart.

Recognized defects in all cases to be considered in connection with size of piece and its quality otherwise.

Bill Stuff shall consist of sizes ordered for specific construction and not intended for "Yard Stock," and must be inspected with the view of its adaptability to the uses intended, and unless manifestly unfit therefor shall be surveyed under this grade, except the order be for a higher grade.

SECONDS.

This grade shall consist of lengths ten feet and over (except shorter lengths be ordered) having any of the recognized defects which exclude it from grading as Merchantable.

Will Allow:

Recognized defects which render it unfit for good substantial construction purposes, but suitable for an inferior class of work.

REFUSE.

This grade shall consist only of commons absolutely unfit for any other use than firewood.

Rough Uppers.**SELECTS.**

Shall be sound, strong lumber, and in flooring, ceiling and finish stock of good grain, well manufactured.

Will Allow:

In sizes under six inches by six inches:

Pin knots, bright sap on corners, one-quarter the width and one-half the thickness, and small pitch seams. Not more than two such defects in for each ten linear feet.

In sizes six inches by six inches and over:

Small and standard knots varying in diameter according to size of piece.

Bright sap on corners not to exceed three inches on both faces and edges.

Large pitch seams.

Recognized defects to be considered in all cases in connection with size of piece and its general quality.

CLEARs.

Flooring, ceiling and finish stock shall be sound, close-grain, well sawn and on one side and two edges free from defects impairing its use for probable purposes intended.

Edge grain in widths twelve inches and wider shall be so graded if showing grain on edge within an angle of 45 degrees, for at least three-fourths of width, and otherwise free from defects on one face and two edges.

Slash grain (nearly parallel to surface) shall be otherwise free from recognized defects on one face and two edges.

Other lumber in this grade shall be uniformly sawn and generally free from recognized defects.

Will Allow:

In dimensions containing twenty-four inches or less to the linear foot:

Bright sap when not exceeding one-quarter the width, thickness or length.

Small pitch seams when not extending through the piece.

In dimensions three inches to six inches thick and over eight inches to twelve inches wide:

Pin knots when on one side and lower half of edges.

Bright sap not exceeding one-fourth the face or edges, or one-third the length.

Small pitch seams when not extending through the piece.

In dimensions larger than above:

Small knots, according to size of piece, when on one face and lower half of edges, leaving one face and upper half of edges clear.

Bright sap on corners not exceeding three inches on face and edges, or one-half the length.

Large pitch seams, when not extending through the piece.

SHIP STUFF.

All lumber for this purpose shall be strong, of live wood, and close grain.

No. 1 Plank.

Includes outboard planking, garboards, wales, clamps, rails and lumber for similar purposes; if worked, to be fairly smooth.

Will Allow:

Small, tight, hard knots when not on corners or caulking seam.

Bright sap on face side edges not exceeding one-quarter the width or thickness.

Small pitch seams not extending through the piece.

Said defects to be considered in connection with size of piece and its quality otherwise.

No. 1 Decking.

Shall be uniformly sawn, close-grain, free from recognized defects on one face and both edges, and if worked to be of uniform size and fairly smooth. Flat sizes shall show edge grain on broad face, and both square and flat sizes be free from recognized defects on edge grain face.

Will Allow:

Pin knots on under side and lower part of caulking edges.

Bright sap on face side edges not exceeding one-eighth the width and one-fourth the thickness.

No. 2 Plank and Decking.

This grade shall include all of above material not suited for grading as No. 1 hereunder, but in quality shall be equal to the grade of Select.

CAR. STOCK.

Lumber in this grade shall be strong, of fine grain, and uniformly sawn.

Sizes two inches thick and less and twelve inches and less wide shall be practically clear, free from all recognized defects that would impair it for its intended use.

Will Allow.

In dimensions over two inches thick and twelve inches wide:

Small knots, according to size of piece.

Bright sap in limited amount, according to size of piece.

Small pitch seams.

Said defects to be considered in connection with size of piece and its quality otherwise.

No. 2.

This grade shall include material impaired by recognized defects from grading as No. 1, but generally conforming to the grade of "Selects."

Car Siding and Roofing.

To be graded under rules for D. & M. Ceiling.

Worked Uppers.**D. & M. FLOORING No. 1.**

This grade shall consist of lengths ten feet and up (except shorter lengths be ordered), edge grain on face for three-quarters of width; of sound, close-grain lumber, and free from recognized defects on face and edges; well worked, and conform generally to grade of Clears.

Will Allow:

One pin knot in each piece.

Bright sap when not extending over one-quarter face and length.

Only one such defect allowed in any one piece.

No. 2.

This grade shall consist of edge or slash grain of lengths ten feet and up (except shorter lengths when ordered), well worked and conform generally to the grade of Selects.

Will Allow:

Small knots, if not appearing on edges.

Bright sap, when not extending over one-half the face and length.

Small pitch seams.

Chipped grain.

Said defects to be considered in connection with length of piece and its quality otherwise. Not more than two such defects to each twelve linear feet.

No. 3.

This grade shall consist of lengths six feet and up regardless of grain, and conform generally to grade of Merchantable.

STEPPING.

This material shall consist of lengths ten feet and over (except shorter lengths be ordered), and defects allowed shall be considered with regard to length of piece.

No. 1.

This grade shall conform generally to grade of clears, be worked smooth on one side, shall show edge grain on face to extent of not less than three-fourths of width, and free from defects on face and one edge.

No. 2.

This grade shall show edge grain on face to extent of not less than one-half the width, and conform generally to grade of "Selects."

Will Allow:

Pin knots on one face or one edge.

Bright sap, when not extending over one-quarter the width.

Small pitch seams.

Chipped grain and other recognized defects impairing it from grading as No. 1.

No. 3.

This grade shall be regardless of grain, and conform generally to grade of Merchantable.

RUSTIC SIDING AND CEILING No. 1.

Shall consist of lengths ten feet and up (except shorter lengths be ordered), sound lumber, regardless of grain, free from recognized defects on face and edges, well worked and conform generally to grade of "Clears."

Will Allow:

One pin knot.

Or bright sap not extending over one-quarter width or length of piece.

Only one such defect allowed in any one piece.

No. 2.

This grade shall conform generally to grade of "Selects."

Will Allow:

Small knots if not appearing on edges.

Bright sap, when not extending over one-half the face and length.

Small pitch seams if not extending through the piece.

Chipped grain.

Said defects to be considered in connection with size and length of piece.

No. 3.

Shall conform generally to grade of Merchantable.

**Cypress Grading Rules, Southern Cypress Lumber Association, in Effect
February 22, 1897.**

Adopted by The Hardwood Mfrs. Ass'n of the U. S. January 28, 1903.

TANK STOCK.

Shall be 5" and over in width, $1\frac{1}{4}$ " to 4" thick and 8' and over long. Pieces up to 7" shall be free of sap. Pieces wider than 7" may have 1" of sound sap on one edge, not to exceed half the length and half the thickness of the piece. In all widths, sound knots that do not impair its usefulness for tank purposes may be admitted.

FIRST AND SECOND CLEAR.

Shall be 8" and over in width. Pieces 8" to 10" may have 1" of bright sap on each edge, or its equivalent on one edge, otherwise they must be clear. Pieces 10" and under 12" wide may have $1\frac{1}{2}$ " of bright sap on each edge, or 3" on one edge, and one standard knot $1\frac{1}{4}$ " in diameter.

Pieces 12" wide may have one standard knot and 2" of bright sap on each edge, or the equivalent on one edge; or in lieu of sap may have two standard knots or their equivalents. Pieces wider than 12" may admit of defects in proportion as width increases. Pieces 14" and wider may have one straight split not over 10" to 12" long, when comparatively free from other defects. Slight season checks allowed in above grade.

SELECTS.

Shall have one face side and be 7" and over in width. Pieces 10" and under in width shall admit two standard knots of $1\frac{1}{4}$ " in diameter, and an additional standard knot for every two inches in width, over 10". Bright sap not considered a defect. Unsound knots that do not go through the piece to be allowed. Pieces free from other defects, 10" and over wide, to admit pin worm holes on one edge one-tenth the width of the piece. Season checks, no defect. Slight wane on 10" piece and over allowed on one side, not over 3 feet in length. When no other defects appear, slight amount stained sap may be allowed. Pieces 10" and over in width may have a straight split not to exceed 12" in one end, when comparatively free from other defects.

SHOP.

Shop to be 6" and over in width, 8' and over in length, and to include all lumber that will not go into above grades, but that will cut for shop use 60 per cent, clear of waste.

MERCHANTABLE OR COMMON.

May be any width, admitting sap, knots, shake or peck, when the strength is not impaired.

STRIPS.

Four-inch to 6" strips shall be graded A, B, C, D, and read the same as flooring grades.

SIDING.

"Clear and A" siding may have 1" of bright sap on thin edge, and may contain one small sound knot.

"B"—May have $\frac{1}{3}$ of face bright sap if otherwise clear, or in lieu of $\frac{1}{3}$ sap, may contain two small sound knots.

"C"—May be all bright sap or may have one to five knots, the whole not aggregating over 3", or knots or other defects that can be removed in two cuts with waste not exceeding 12" in length, or three pin worm holes, and may have check or split at one end, not exceeding 12" in length.

"D"—May have stained sap and pin worm holes, or may have other defects that will not cause a waste to exceed $\frac{1}{3}$ the piece.

DRESSED FINISHING.

Seven inches (7") and up random width to be two grades, as described in first and Second Clear and Select.

FLOORING, CEILING AND PARTITION.

Clear must be free of sap and defects.

"A"—May have 1" bright sap on one edge, may contain one small sound knot, or may have bright sap ¼ its width on one end for not exceeding two feet from end.

"B"—May have ⅓ of its face bright sap if otherwise clear, or in lieu of bright sap, contain two small sound knots, or may have a split not to exceed 9" at one end.

"C"—May have all bright sap, or may have one to five knots, the whole not aggregating over 3", or knots or other defects that can be removed in two cuts with waste not to exceed 12" in length, or may have three pin worm holes, or may have checks or split at one end, not to exceed 12" in length.

"D"—May have stained sap and pin worm holes, or may have unsound knots or other defects that will not cause a waste to exceed ⅓ of the piece.

DRESSED FINISHING.

Strips 1, 1¼ and 1½x4 to 6 inches wide, to be graded as First and Second Clear and Select. The above First and Second Clear Strips, which are 1, 1¼ and 1½ thick shall have one heart face, and will admit one inch sap on one edge. Select may be all bright sap, or in lieu of sap may contain two standards knots. 2x4 and 2x6 to be graded Clear and Select as described in above 1, 1¼ and 1½ Strips.

SQUARES.

Squares to be graded Clear and Select 4x4 to 10x10. A Clear Square to admit ¼ its size of sap on one corner. Select may have half bright sap.

SHINGLES.

Best.—A dimension shingle, 4, 5 and 6 inches, each width separately bunched, sixteen inches long, five butts to measure two inches, all heart free of shakes, knots and other defects.

Primes.—Dimension, 4", 5", 6", each width separately bunched, sixteen inches long, five butts to measure two inches, admitting tight knots, sap free of shakes and other defects, but with no knots within eight inches of the butt.

Extra "A."—Same as Primes, except random width and may admit of shingles fourteen inches long.

Clippers.—Any shingles which are sound for five inches from the butts—worm holes excepted—and two and one-half inches or up in width.

WEIGHTS.

	Lbs. per M.
Lumber, rough, 2 inches and under.....	3000
Lumber, rough, 2½ and 3 inches.....	3500
⅞ inch flooring and ceiling.....	2300
⅝ inch ceiling	1600
½ inch ceiling	1300
⅜ inch ceiling	1000
½ inch bevel siding	1000
Shingles, all grades	300
¾ inch plaster lath.....	500
⅝ inch fence lath	900
1¼x1¼x4 D & H Pickets.....	1600
⅞x2½x4 D & H Pickets.....	1800
2 inch O. G. Battens.....	500
2½ inch O. G. Battens.....	600
3 inch O. G. Battens.....	700

GAUGES FOR MATCHED LUMBER.

Flooring.—1x4 and 1x6 shall be 27-32x3¼" and 27-32x5¼".
1¼" flooring shall be 1 3-32".

Ceiling.—⅜" shall be 5-16", ½" shall be 7-16".
⅝" shall be 9-16", ¾" shall be 11-16",
and the widths shall be the same as flooring.

UNIVERSAL STANDARD LOG SCALE.

OFFICIAL SCALE OF

The Hardwood Manufacturers' Association of the United States.

ADOPTED JUNE, 1902.

Length in Feet.

		8	10	12	14	16	18	20	22	24
Diameter in Inches.	10	18	23	27	32	36	41	46	50	54
	11	24	31	37	43	49	55	61	67	74
	12	32	40	48	56	64	72	80	88	96
	13	40	50	61	71	81	91	101	111	122
	14	50	62	75	88	100	112	125	137	150
	15	60	75	91	106	121	136	151	166	181
	16	72	90	108	126	144	162	180	198	216
	17	84	106	127	148	169	190	211	232	253
	18	98	122	147	171	196	220	245	269	294
	19	112	141	169	197	225	253	280	309	338
	20	128	160	192	224	256	288	320	352	384
	21	144	181	217	253	289	325	361	397	433
	22	162	202	243	283	324	364	404	445	486
	23	180	226	271	313	359	406	452	496	541
	24	200	250	300	350	400	450	500	550	600
	25	220	276	331	386	441	496	551	606	661
	26	242	302	363	423	484	544	605	665	726
	27	264	330	397	463	530	596	661	726	794
	28	291	363	436	509	582	654	728	800	873
	29	305	381	457	533	609	685	761	838	914
	30	328	411	493	575	657	739	821	904	986
	31	355	444	532	622	710	799	888	976	1065
	32	368	460	552	644	736	828	920	1012	1104
	33	392	490	588	686	784	882	980	1078	1176
	34	400	500	600	700	800	900	1000	1100	1200
	35	438	547	657	766	876	985	1095	1204	1314
	36	462	577	692	807	923	1038	1152	1268	1384
	37	514	644	772	901	1029	1158	1287	1415	1544
	38	534	669	801	934	1068	1201	1335	1468	1602
	39	560	700	840	980	1120	1260	1400	1540	1680
	40	602	752	903	1053	1204	1354	1505	1655	1806
	41	636	795	954	1113	1272	1431	1590	1749	1908
	42	671	840	1007	1175	1343	1511	1679	1846	2014
	43	698	872	1046	1222	1396	1571	1745	1918	2092
	44	740	925	1110	1295	1480	1665	1850	2035	2220
	45	759	949	1139	1329	1518	1707	1898	....	....
	46	793	991	1190	1388	1587	1785	1983	....	....
	47	828	1035	1242	1449	1656	1862	2070	....	....
	48	864	1080	1296	1512	1728	1944	2160	....	....

The above rule is a combination of the Doyle and Scribner rules. Doyle, 27 inches and under. Scribner, 28 inches and over.

Southern Cypress Manufacturers' Association.

STANDARD GRADES AND CLASSIFICATIONS OF CYPRESS LUMBER AND SHINGLES.

Adopted at Atlantic Beach, Fla., July 18, 1906.

GENERAL INSTRUCTIONS.

The aim of these grading rules is to harmonize the natural differences which exist in the timber sawed at the various mills in this Association, in an effort to make the shipments of lumber from the different mills **uniform** and of **equal intrinsic value**, grade for grade.

To that end, cypress lumber shall be graded according to the following rules and specifications, bearing in mind that as no arbitrary set of rules and specifications can be maintained in every case, much must be left to the common sense and best judgment of the inspector.

Lumber shall be manufactured and shipped uniform and even in standard lengths and thicknesses.

Tank, first and second and worked partition shall be graded from the poorer side.

Select lumber, flooring, ceiling, bevel siding and finishing shall be graded from the better or finished side, but the reverse side shall in no case be more than one grade lower.

All lumber shall be tallied surface or face measure, the tally counted up, and the one-quarter or one-half added to the total where the lumber is one and one-quarter or one and one-half inches thick, and two inches and thicker to be multiplied by the thickness.

In the measurement of all lumber, fractions exactly on the one-half foot are to be given alternately to the buyer and seller, the fractions below the one-half foot are to be dropped, and all fractions above the one-half foot are to be counted to the next higher figure on the board rule.

Recognized defects in cypress are knots, knot holes, shake, splits, wane, worm holes, stained sap and peck.

STANDARD DEFECTS.

A standard knot is sound and not to exceed one and one-quarter inches in diameter.

A small sound knot is one not exceeding three quarters of an inch in diameter.

Two small knots not to exceed in extent or damage one 1¼-inch knot.

One straight split not to exceed in length the width of the piece.

Worm, grub, knot and rafting pin holes not exceeding in damage one one-fourth-inch knot.

Ordinary season checks shall not be considered a defect in any grade.

Bright sap is not a defect in select or below.

Pin worm holes, sound knots and stained sap shall not be considered a defect in No. 1 common or below.

STANDARD LENGTHS.

Tank stock, shop and No. 1 common shall be 8 feet and longer.

First and second and select shall be 10 to 20 feet.

Finish flooring, ceiling, partition, bevel and drop siding shall be 10 to 20 feet.

Moulding of all sizes 8 to 20 feet.

No. 2 common 6 feet and longer.

Cull or peck 4 feet and longer.

STANDARD THICKNESSES.

All lumber shipped in the rough shall be the even thickness.

4/4 lumber S1S or S2S shall be 13-16 inch thick.

5/4 lumber S1S or S2S shall be 1⅞ inches thick.

6/4 lumber S1S or S2S shall be 1¾ inches thick.

8/4 lumber S1S or S2S shall be 1¾ inches thick.

10/4 lumber S1S or S2S shall be 2¼ inches thick.

12/4 lumber S1S or S2S shall be 2¾ inches thick.

All lumber S1E takes off three-eighths inch; S2E., one-half inch.

All flooring shall be S2S and C. M.

4/4 flooring shall be 13-16 inch by 2¼-inch, 3¼-inch, 4¼-inch, 5¼-inch face.
5/4 flooring shall be 1 3-32, 6/4 shall be 1 11-32, by same widths as 4/4.
¾ ceiling shall be worked 5-16 inch, S1S only.
½ ceiling shall be worked 7-16 inch, S1S only.
⅜ ceiling shall be worked 9-16 inch, S1S only.
¼ ceiling shall be worked 11-16 inch, S1S only.
All widths of ceiling to be the same as flooring.
Drop siding shall be worked same as flooring.

Bevel siding shall be worked one-half inch less in width than the rough strip measure.

STANDARD WEIGHTS.

	Pounds per M.		
	Green.	Rough. Dry.	S1S or S2S. Dry.
Lumber, 2½ inch and 3 inch.....	5,000	3,500	2,900
Lumber, 2 inch	5,000	3,200	2,600
Lumber, 1½ inch, 1¼ inch and 1 inch.....	5,000	3,000	2,400
½-inch panel stock			1,400
⅜-inch panel stock			1,700
13-16-inch flooring, partition, drop siding, moulded casing and base.....			2,200
⅝-inch ceiling			1,600
½-inch ceiling			1,300
⅜-inch ceiling			1,000
½-inch bevel siding.....			1,000
Shingles, all grades.....			300
Lath, ¾-inch			500
Lath, ⅝-inch			900
1½x1½—4' pickets, D. & H.....			1,200
1¾x1¾—4' pickets, D. & H.....			2,000
13-16x2½—4' pickets, D. & H.....			1,700
O. G. battens, 2-inch.....			300
O. G. battens, 2½-inch.....			350
O. G. battens, 3-inch			400
¾x3 battens			300

TANK STOCK.

This grade shall be random widths, and will not be furnished in specified widths, and shall be graded from the poorer side.

This grade shall be 5 inches and wider, 1½ to 4 inches thick and 8 feet and over in length. Pieces up to 7 inches shall be free from sap. Pieces wider than 7 inches may have 1 inch of sound sap on one edge, not to exceed half the length and half the thickness of the piece. In all widths sound knots or slight season checks that do not impair usefulness for tank purposes may be admitted.

FIRST AND SECOND CLEAR.

This grade shall be random widths, and will not be furnished in specified widths, and shall be graded from the poorer side.

This grade shall be 8 inches and wider, 1 to 4 inches thick and 10 feet and over in length. Pieces 8 to 10 inches may have 1 inch of bright sap on each edge, or its equivalent on one or both edges, otherwise, they must be clear. Pieces 10 inches and under 12 inches may have 1½ inches of bright sap on each edge or 3 inches on one edge, and may have one standard knot. Pieces 12 inches wide may have 2 inches of bright sap on each edge, or 4 inches on one edge and may have one standard knot; or, in lieu of sap, may have two standard knots or their equivalent. Pieces wider than 12 inches may admit of defects as specified above in proportion as width increases. Pieces 10 inches and wider may admit of one end split, which shall not exceed in length the width of the piece. Slight season checks allowed in this grade. Pieces free from other defects may have bright sap across one face at one end, but this sap shall not exceed in length one-tenth of the length of the piece.

SELECTS.

This grade shall be random widths, and will not be furnished in specified widths, and shall be graded from the better side, but the reverse side shall not be more than one grade lower.

This grade shall be 7 inches and wider, but will not be furnished wider than 12 inches; shall be 1 to 3 inches thick, 10 feet and longer. Pieces 10 inches and under in

width shall admit two standard knots and an additional standard knot for every 2 inches in width over 10 inches. Pieces free from other defects, 10 inches and over in width, to admit pin worm holes on one edge one-tenth the width of the piece. Bright sap is not a defect in this grade. Season checks are not a defect in this grade. Slight wane on pieces 10 inches and over in width is allowed on one edge not over 3 feet in length. When no other defect appears, slight amount of stained sap may be allowed. Pieces 10 inches and wider may admit of one end split which shall not exceed in length the width of the piece.

SHOP.

This grade shall be random widths, and will not be furnished in specified widths; shall be 5 inches and wider, 1 to 3 inches thick, 8 feet and longer, and shall be graded No. 1 and No. 2 shop.

No. 1 SHOP.

In this grade the 1-inch shall cut for shop use 60 per cent. or better of the following cuts and rips: 5 inches wide, or wider, by 3 feet long, or longer; and 9½ inches wide, or wider, by 18 inches long or longer; and strips 2 inches wide, or wider, ripped the entire length of the piece. In this grade 1¼ inches and thicker shall cut for shop use 60 per cent. or better of the following cuts and rips: 5¼ inches wide, or wider, by 3 feet long, or longer; 9 inches wide, or wider, by 2 feet 4 inches long, or longer; and strips 2 inches wide, or wider, ripped the entire length of the piece. In the above cuttings bright sap shall be admitted.

No. 2 SHOP.

This grade shall cut for shop use 40 to 60 per cent. of the same size cuts and rips as the corresponding thicknesses in No. 1 shop. In the above cuttings bright sap shall be admitted.

SELECTED COMMON TANK STOCK.

This grade shall be 4 inches wide, or wider, 1½ and 2 inches thick, 8 feet and over in length. Sound sap no defect in this grade, but must be free from wane edge, unsound knots or other defects that extend through the thickness of the piece, and must be square edged to work the full length of the piece.

No. 1 COMMON.

This grade may be either random or specified widths, shall be 3 inches and wider, 1 inch and thicker, 8 feet and over in length, admitting sap, bright or stained, shake, knots, pin worm holes, and a small amount of peck on one side and one edge, which defects, however, shall not be sufficient to seriously impair the strength, or prevent the use of each piece for "common" purposes in its full length and full width.

No. 2 COMMON.

This grade may be 1x6, otherwise random widths, 4 inches and wider, 1 to 2 inches thick, 6 feet and over in length, admitting all the defects allowed in No. 1 common grade, and in addition will admit peck on both sides, loose knots and knot holes; however, above defects shall not be sufficient to cause more than one-third waste in this grade, when used for ordinary boxing, crating and sheathing purposes.

The 1x6 in this grade shall have sufficient strength to permit its use as low grade fencing.

CULL OR PECK.

This grade may be random or specified widths 3 inches and wider, 1 to 4 inches thick, 4 feet and over in length. Shall admit all pieces below the grade of No. 2 Common, and shall also admit the product of that part of the log known as "pecky"; however, each piece shall have sufficient strength and nailing surface to permit its use as a low-grade boxing, crating, sheathing and foundation material.

FINISHING.

Shall be specified widths 4 inches and wider, 1 to 2 inches thick, 10 feet and over long, and shall be graded from the better side A, B and C, but the reverse side shall not be more than one grade lower. All grades of finish, rough or S1S or S2S may vary one-fourth inch from the width specified.

"A" Finish.—Pieces 4 and 5 inches wide shall be clear of sap, knots and other defects. Pieces 6 inches wide may have 1 inch of bright sap, or in lieu of sap one small sound knot. Pieces 7 and 8 inches wide may have 2 inches of bright sap, or in lieu of

sap one small sound knot. Pieces 9 and 10 inches wide may have 3 inches of bright sap, or in lieu of sap two small sound knots, or 1½ inches of bright sap and one small sound knot. Pieces 12 inches wide may have 4 inches of bright sap, or in lieu of sap one standard knot, or two small sound knots, or 2 inches of bright sap and one small sound knot. Pieces 14 inches or wider may have more defects in proportion as the width increases.

"B" Finish.—Pieces 4, 5 and 6 inches wide may have 2 inches of bright sap and one or two small sound knots, or in lieu of knots may have all bright sap. Pieces 7 and 8 inches wide may have 3 inches of bright sap and two small sound knots, or in lieu of knots may have all bright sap. Pieces 9 and 10 inches wide may have 4 inches of bright sap and one standard knot or three small sound knots, or in lieu of knots may have all bright sap. Pieces 12 inches wide may have 6 inches of bright sap and one standard or four small sound knots, or in lieu of knots may have all bright sap. This grade will not be furnished wider than 12 inches.

"C" (or Shop) Finish.—All widths in this grade may have knots or other defects that can be removed with waste not to exceed one-tenth of the length of the piece, and may have a small amount of stained sap or three pin worm holes in addition to above 10 per cent. of wastage.

"D" (or Selected Common) Finish.—This grade will not be furnished wider than 10 inches. All widths will admit sound knots, stained sap, pin worms, slight shakes, and other defects; but none that will prevent the use of each piece in its full width and length for common finishing purposes.

SIDING.

Siding shall be 4 and 6 inches in width, 10 to 20 feet in length, and graded from the finished side, A, B, C and D.

"A" Siding.—May have 1 inch of bright sap on thin edge, and may contain one small sound knot.

"B" Siding.—May have any amount of bright sap, or if not all bright sap, may have three sound knots, or any other defect in wane on the thin edge, shake, split or pin worm holes not exceeding in damage the three small sound knots above described.

"C" Siding.—May have one to five knots, the whole not aggregating over 3 inches in diameter, or knots, splits or other defects that can be removed in two cuts with waste not exceeding 12 inches in length, or may have small amount of stained sap and pin worm holes not exceeding in damage the five small knots above described.

"D" Siding.—May have stained sap and pin worm holes, or may have other defects that will not cause a waste to exceed one-third the piece.

FLOORING AND CEILING.

Shall be specified widths, 10 to 20 feet in length and graded from the finished side, or if both sides are finished, it shall be graded from the better side, A, B, C and D.

"A"—May have 1 inch bright sap on one edge, may contain one small sound knot or may have bright sap one-fourth its width on one end for not exceeding two feet from end.

"B"—May have one-half of its face bright sap if otherwise clear, or in lieu of sap, may contain two small sound knots, or may have a split not to exceed 9 inches at one end.

"C"—May have all bright sap, or may have one to five knots, the whole not aggregating over 3 inches, or knots or other defects that can be removed in two cuts with waste not exceeding 12 inches in length, or may have three pin worm holes, or may have check or split at one end, not to exceed 12 inches in length.

"D"—May have stained sap and pin worm holes, or may have unsound knots or other defects that will not cause a waste to exceed one-third the piece.

PARTITION.

Shall be same widths and lengths as flooring and ceiling, but shall be graded from the poorer side, A, B, C and D, same grading to apply as in flooring and ceiling.

PICKETS.

Shall be graded No. 1 and No. 2.


No. 1.—Shall be well manufactured, bright sap no defect, and may contain one small sound knot.

No. 2.—Shall admit stained sap, sound knots, pin worm holes, slight shake, and pickets thrown out of the No. 1 grade because of poor manufacture.

TURNING SQUARES.

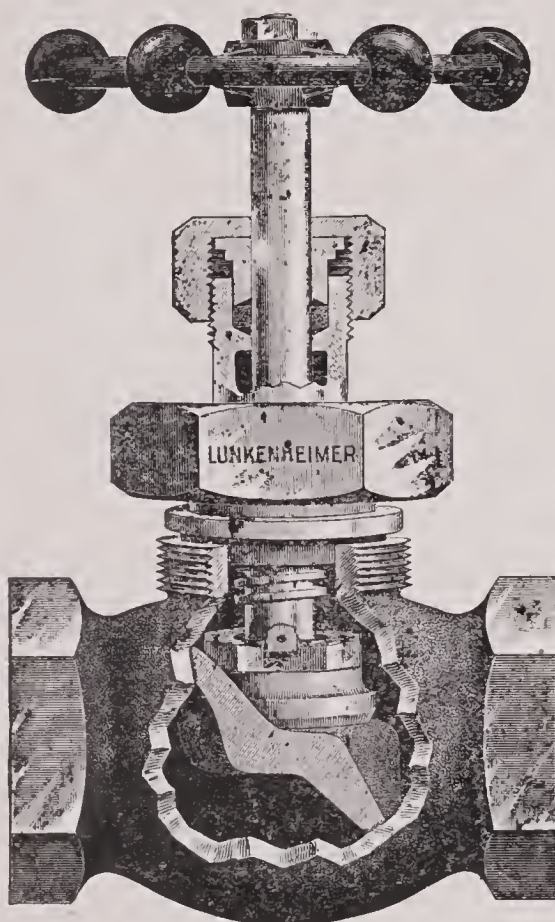
Sizes, 4x4 to 8x8. Lengths, 8 feet and longer.

Will admit one-quarter their size in sap on one corner, showing on two faces, and may contain one to five small sound knots.



LUNKENHEIMER Regrinding Valves

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London, S.E., 35 Great Dover Street

SHINGLES.

Bests.—A dimension shingle, 4, 5 and 6 inches in width, 16 inches long, each width packed separately, 5 butts to measure 2 inches, to be all heart and free of shake, knots and other defects.

Primes.—A dimension shingle, 4, 5 and 6 inches in width, 16 inches long, each width packed separately, 5 butts to measure 2 inches, admitting tight knots and sap, but free of shake and other defects, but with no knots within 8 inches of the butts.

This grade may contain shingles clipped two-thirds of the width and one-eighth of the length on the point.

Star A Star.—A random width shingle 3 inches and wider, 14 to 16 inches long, otherwise the same as primes.

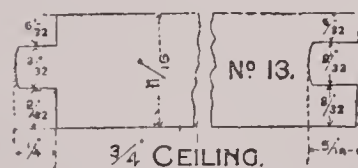
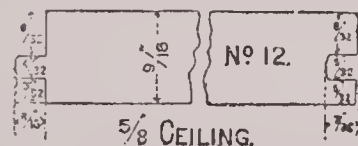
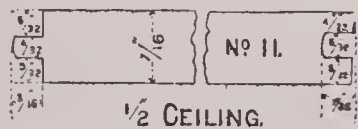
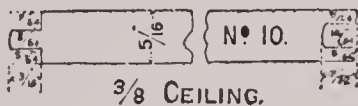
Economy.—Dimensions 4, 5 and 6 inches, each width separately bunched, admitting sap and sound knots, may have slight peck 5 inches from butts, imperfections on points no objection and admitting 14-inch shingles.

Clippers.—All shingles below the above grades which are sound for 5 inches from the butts, worm holes and slight peck excepted, random widths $2\frac{1}{2}$ inches and wider.

The count of our manufacture of shingles, of all grades, is based on 4,000 lineal inches in width, making 1,000 standard shingles, consequently there would be only 667 6-inch shingles packed and counted as 1,000 standard shingles; 5-inch dimension being counted in like proportion.

STANDARD SIZES OF

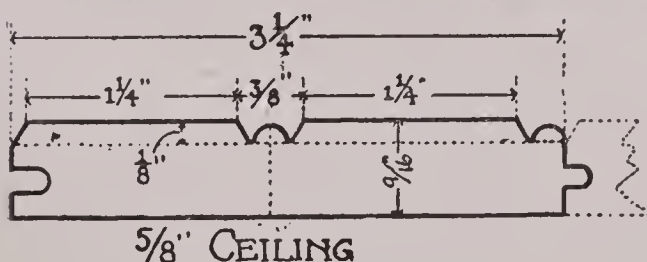
Yellow Pine Ceiling

STANDARD SIZE AND LOCATION
OF

...BEAD...

ON

4 in. CEILING AND PARTITION

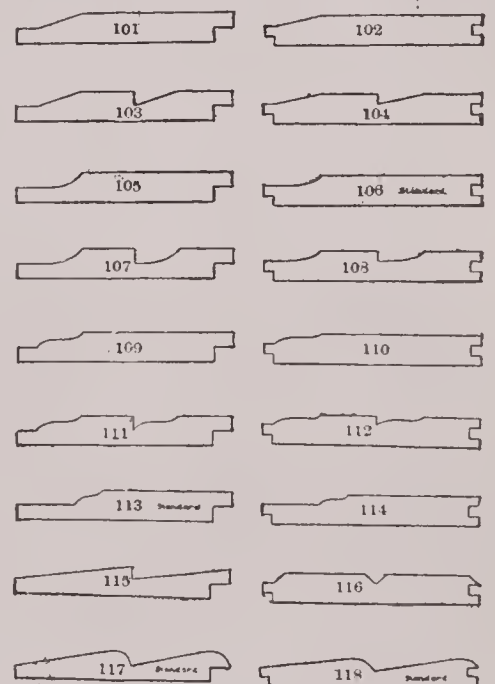


PATTERNS OF

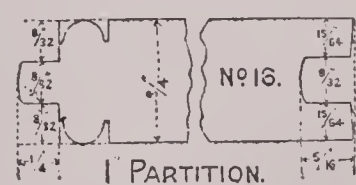
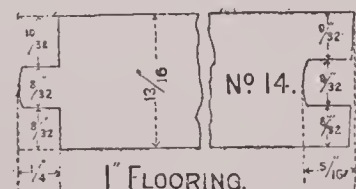
Yellow Pine Drop Siding

Adopted at Memphis, Tenn., Jan. 16, 1901.
Revised at New Orleans, La., Jan. 25, 1905.

Worked Ship-lap— $\frac{1}{4} \times 5\frac{1}{4}$ over all; allow $\frac{1}{8}$ inch for Lap. Worked Tongue and Groove— $\frac{1}{4} \times 5\frac{1}{4}$ over all; $5\frac{1}{4}$ in. Face.



Orders for Stock Should Conform to Above Numbers.



CLASSIFICATION AND INSPECTION FOR BAY POPLAR (TUPELO) LUMBER.

Adopted at New Orleans, La., March 1, 1906.

GENERAL EXPLANATIONS.

All lumber must be inspected on the poorer side.

All tapering boards shall be measured at the narrow end and in lengths of even feet.

Lumber shall be sawed of full and even thickness.

Scant sawed lumber shall be reduced to the next standard thickness.

The standard lengths are four to sixteen feet.

The standard thicknesses are $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch, 1 inch, $1\frac{1}{4}$ inches, $1\frac{1}{2}$ inches, 2 inches, $2\frac{1}{2}$ inches, 3 and 4 inches, when dry.

All lumber less than one inch in thickness shall be measured face measure.

Bright sap in bay poplar is not to be considered a defect, and sap shall be considered bright which will show bright when planed once.

Ordinary season checks are not to be considered defects.

STANDARD DEFECTS.

One knot $1\frac{1}{4}$ inches in diameter. Two knots not exceeding in extent one standard knot.

Worm holes, grub holes, or rafting-pin holes not exceeding in extent or damage one standard knot.

One bark edge or wane not to exceed one inch in the aggregate, running not to exceed one-third the length of the board and showing on one edge only, said wane to be measured.

Splits that do not diverge more than one inch for each foot in length are straight splits.

Wide pieces of lumber that would take two or three standard defects may have one large defect equal to two or three standard defects.

STANDARD GRADES.

All standard grades of bay poplar shall be classified for the purpose of inspection, as follows:

Box Boards, first and second clear, No. 1 Common, No. 2 Common and No. 3 Common.

BOX BOARDS.

Shall consist of boards 13 inches and wider, 12, 14 and 16 feet in length; end splits amounting to six inches in length and three sound pin knots not exceeding three-quarter inches in diameter showing on one side only shall be admitted. Slightly discolored sap, which will dress up sound, not necessarily bright, but not black, shall be admitted.

FIRST AND SECOND CLEAR.

Shall be six inches and over in width, 10, 12, 14 and 16 feet in length, pieces six inches to eight inches wide shall be clear. Pieces nine inches to ten inches wide shall admit one standard defect or its equivalent; pieces 11 inches to 12 inches wide shall admit two standard defects or their equivalent; for each additional two inches in width over 12 inches an additional standard defect or its equivalent shall be admitted. In this grade straight splits shall be admitted which do not exceed in length the width of the pieces in inches. Slightly discolored sap which will dress up sound, not necessarily bright, but not black, shall be admitted.

No. 1 COMMON.

Shall be four inches and over in width, eight feet and over in length. Pieces four inches and five inches wide shall be clear one face and have two square edges; pieces six inches to eight inches wide shall admit two standard defects or their equivalent; pieces over eight inches wide shall admit two standard defects or their equivalent in addition to those allowed in firsts and seconds. This grade must work three-quarter clear one face; no cutting to be considered which is less than four inches wide and three feet long. Straight splits shall be admitted in this grade in pieces ten inches and over wide which do not exceed one-quarter the length of the piece. Slightly discolored sap shall be admitted in this grade.

No. 2 COMMON.

Shall be three inches and over in width, six feet and over in length, and shall admit all pieces below the grade of No. 1 Common which will work at least one-half without waste for ordinary box-making purposes. Stain, worm holes, warped and woolly pieces belong in this grade.

No. 3 COMMON.

Shall be three inches and wider, and four feet and longer, and must contain at least 25 per cent. sound cutting, not less than three inches wide and two feet long.

CAR SIDING STRIPS.

Shall be eight or sixteen feet long, one inch thick and six inches wide, and shall have one clear face.

BEVEL SIDING.

A Grade.—Shall be absolutely clear face, except small defects within one inch of the thin edge.

B Grade.—Shall admit slightly discolored sap, or three sound knots, not to exceed three-quarters of an inch in diameter.

C Grade.—Shall comprise stock not up to grade of B, admitting unsound knots, splits, etc., provided three-fourths of the piece will work merchantable.

DROP SIDING.

A Grade.—Shall have one clear face and be otherwise sound.

B Grade.—Shall admit of discolored sap, and in six-inch will admit of two standard knots, in eight-inch four standard knots, or their equivalent in smaller knots.

FLOORING AND CEILING.

A Grade.—Shall have one clear face and be otherwise sound.

B Grade.—Shall admit of one standard knot or three small knots and slight sap stains.

C Grade.—Shall comprise stock not up to grade of B, provided three-fourths of the piece will work merchantable.

Four and six-inch flooring and ceiling shall be worked $3\frac{1}{4}$ and $5\frac{1}{4}$ inch face.

PARTITION.

A Grade.—Must be clear of knots on both sides.

B Grade.—Will be graded the same as B flooring on both sides.

WAINSCOTING.

Shall be graded the same as flooring and ceiling.

CASING, BASE AND MOULDINGS.

Shall be based on Universal Moulding Book.

STANDARD FINISHED SIZES OF DRESSED LUMBER.

One-inch stock surfaces one or two sides to 13-16 inch.

Lumber surfaced one edge takes off $\frac{3}{8}$ inch; surfaced two edges takes off $\frac{1}{2}$ inch.

Flooring or ceiling from 1x4 inch finishes 13-16x $3\frac{1}{4}$ inch face.

Flooring or ceiling from 1x6 inch finishes 13-16x $5\frac{1}{4}$ inch face.

Drop siding D. & M. finishes 13-16 inch with same face as one-inch flooring.

Four-inch and six-inch ceiling will have two beads.

All flooring is S2S and center matched.

Four-inch bevel siding is made from one-inch stock S4S to 13-16x $3\frac{1}{2}$ inch and re-sawed.

Six-inch bevel siding is made from one-inch stock S4S to 13-16x $5\frac{1}{2}$ inch and re-sawed.

All dressed lumber will be shipped standard sizes unless specified otherwise.

WEIGHTS.

	Pounds per M.		
	Green.	Rough. Dry.	S1S or S2S. Dry.
Lumber, 2½-inch and 3-inch.....	5,000	3,500	2,900
Lumber, 2-inch	5,000	3,200	2,600
Lumber, 1½-inch, 1¼-inch and 1-inch.....	5,000	3,000	2,400
½-inch panel stock.....			1,400
⅝-inch panel stock.....			1,700
13-16-inch flooring, partition, drop siding, moulded casing and base.....			2,200
⅝-inch ceiling			1,600
½-inch ceiling			1,300
⅜-inch ceiling.....			1,000
½-inch bevel siding			1,000
Lath, ⅜-inch			500
Lath, ⅝-inch			900
O. G. battens, 2-inch.....			300
O. G. battens, 2½-inch.....			350
O. G. battens, 3-inch.....			400
⅜x3 battens			300

RULES

Regulating the Classification and Inspection of Yellow Pine Lumber as Finally Adopted by Southern Lumber and Timber Association, February 14, 1883.

CLASSIFICATION.

Flooring shall embrace four and five quarter inches in thickness by three to six inches in width. For example: 1x3, 4, 5 and 6; 1¼x3, 4, 5 and 6.

Boards shall embrace all thicknesses under one and a half inches by seven inches and up wide, including one and a half inches in thickness by seven in width. For example: ¾, 1, 1¼ and 1½ inches thick by 7 inches and up wide.

Scantling shall embrace all sizes from two to five inches in thickness and two to six inches in width. For example, 2x2, 2x3, 2x4, 2x5, 2x6, 3x3, 3x4, 3x5, 3x6, 4x4, 4x5, 4x6, 5x5 and 5x6.

Plank shall embrace all sizes from one and one-half to six inches in thickness, not including six inches by seven inches and up in width. For example: 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5¼, 5½, 5¾x7 inches and over wide.

Dimension sizes shall embrace all sizes six inches and up in thickness by seven inches and up in width, including six by six. For example: 6x6, 6x7, 7x7, 7x8, 8x8, 8x9 and up.

Stepping shall embrace one to two and a half inches in thickness by seven inches and up in width. For example: 1, 1¼, 1½, 2 and 2½x7 and up wide.

Rough-edge or Flitch shall embrace all sizes one inch and up in thickness by eight inches and up in width, sawed on two sides only. For example: 1, 1½, 2, 3, 4 and up thick by 8 inches and up wide, sawed on two sides only.

SQUARE-EDGED INSPECTION.

Flooring shall show no wane, shall be free from through or round shakes or knots exceeding 1½ inches in diameter, or more than six in a board; sap no objection.

Boards shall show no wane, shall be free from round or through shakes, large or unsound knots; sap no objection.

Scantling shall be free from injurious shakes, unsound knots, or knots to impair strength; sap no objection.

Plank shall be free from unsound knots, wane, through or round shakes; sap no objection.

Dimension Sizes.—Sap no objection; no wane edges, no shakes to show on outside of stick.

All Stock to be well and truly manufactured, full to sizes, and saw butted.

MERCHANTABLE INSPECTION.

Flooring shall show one heart face, regardless of sap on opposite side, free from through or round shakes or knots exceeding one inch in diameter, or more than four in a board on the face-side.

Boards nine inches and under wide shall show one heart face and two-thirds heart on opposite side; over nine inches wide shall show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Scantling shall show three corners heart, free from injurious shakes or unsound knots.

Plank nine inches and under wide shall show one heart face and two-thirds heart on opposite side; over nine inches wide show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Dimension Sizes.—All square lumber shall show two-thirds heart on two sides, and not less than one-half heart on two other sides. Other sizes shall show two-thirds heart on faces, and show heart two-thirds of the length on edges, excepting where the width exceeds the thickness by three inches or over, then it shall show heart on the edges for one-half the length.

Stepping shall show three corners heart, free from shakes and all knots exceeding one-half an inch in diameter, and not more than six in a board.

Rough-edge or Flitch shall be sawed from good heart timber, and shall be measured in the middle on the narrow face, free from injurious shakes or unsound knots.

All Stock to be well and truly manufactured, full to size, and saw butted.

PRIME INSPECTION.

Flooring shall show one entire heart face and two-thirds heart on the opposite side, clear of splits, shakes or knots exceeding one inch in diameter, or more than four in a board.

Boards shall show one heart face and two-thirds heart on opposite side, free from shakes and large or unsound knots.

Scantling shall show three corners heart and not to exceed one inch of sap on fourth corner, measured diagonally, free from heart shakes, large or unsound knots.

Plank shall show one entire heart face; on opposite face not exceeding one-sixth its width of sap on each corner, free from unsound knots, through or round shakes; sap to be measured on face.

Dimension Size.—On all square sizes the sap on each corner shall not exceed one-sixth the width of the face. When the width does not exceed the thickness by three inches, to show one-half heart on narrow faces the entire length; exceeding three inches, to show heart on narrow faces the entire length; sap on wide faces to be measured as on square sizes.

Rough-edge or Flitch shall be measured in the middle on narrow face, inside of sap free from shakes or unsound knots.

CLEAR INSPECTION.

Flooring, Stepping and Boards shall be free of knots, sap, pitch, and all other defects.

Scantling shall be free of sap, large knots and other defects.

Plank shall be free of sap, large knots or other defects.

Dimension Sizes shall be free from sap, large or unsound knots, shakes through or round.

DESIGNATIONS OF THE TRADE.

Resawed Lumber—Lumber sawn on four sides.

Rough-edge or Flitch—Lumber sawn on two sides.

Timber—Hewn only.

RULES OF THE SOUTHERN YELLOW PINE SASH, DOOR, AND BLIND MANUFACTURERS' ASSOCIATION.

Adopted at Birmingham, Ala., Nov. 15, 1904.

GRADES OF DOORS.

Four-A, A-A, B, and C.

A-A Doors for Oil.—Material for A-A Doors for oil finish must be free from knots, blue stain, pitch streaks, or pitch pockets; workmanship must be good.

A Doors for Paint.—Material in A Doors must be free from pitch pockets and knots exceeding three-eighths inch in diameter, admitting pitch streaks not over three-eighths inch wide and three inches long, and small streaks or blotches or slight stain; no piece to contain more than three such defects, and no door more than five such defects on each side. Season checking that paint will cover not considered a defect. Workmanship must be good.

B Doors.—Material in B Doors may contain knots not to exceed $1\frac{1}{2}$ inches in diameter, and blue sap showing on both sides not to exceed 50 per cent. in any one piece of the door, and gum spots showing on one side of a piece only, and other slight defects which shall not exceed six in number on each side. Any piece free from knots may contain any quantity of blue stain on one side; season checking not considered a defect. Slight defects in workmanship admitted.

C Doors.—Material in C Doors may contain all stained sap and small worm holes, shakes that do not go through, and sound, firm knots of any size; plugs admitted; also defects in workmanship. Twenty (20) defects allowed on each side, but not more than six (6) defects to any one piece. Season checking not considered a defect.

WINDOWS.

Check rail windows may contain two knots, $\frac{3}{8}$ inch in diameter, or one knot $\frac{5}{8}$ inch in diameter, in each piece of a window; white sap, and not over $33\frac{1}{3}$ per cent. blue sap may be admitted in any one window. Workmanship must be good.

Plain rail windows and sash may contain blue sap and small knots.

BLINDS.

Outside blinds must be made of clear lumber, except that small sound knots—blue stain and white sap—may be admitted. Workmanship must be good.

WOODS ADMISSIBLE.

Long Leaf and Short Leaf Yellow Pine, and North Carolina Pine.

Doors to be through-tenoned, blind-tenoned, or doweled.

The Universal Sash, Door and Blind List of October 15, 1903, was adopted, and the following discounts decided upon:

A-A Doors, 80 per cent. discount from list of A Doors, plus 15 per cent.

A Doors, 80 per cent.

B Doors, 82 per cent.

C Doors, 80 per cent.

Open Sash, 73 per cent.

Blinds, 68 per cent.

Glazed Sash, 8x12 light, 80 per cent.

Glazed Sash, 2x4 light, 78 per cent.

With freight allowance of 32 cents per Cwt. where freight is more than that amount; where less, actual freight only allowed.

CLASSIFICATION AND INSPECTION OF YELLOW PINE FOR EXPORT, ALSO INTERIOR RULES.

WEIGHT OF YELLOW PINE.

Long Leaf Pine District.

4x4 and 6x6, rough, green.....	4,200
6x8 and over, rough, green.....	4,300
6x8 and over, S 4 S, green.....	3,800

Short Leaf Pine District.

Flooring, 13-16, plain back.....	2,000
Flooring, 13-16, hollow back.....	1,900
Ceiling, $\frac{3}{8}$	1,000
Ceiling, $\frac{1}{2}$	1,300
Ceiling, $\frac{5}{8}$	1,500
Ceiling, $\frac{3}{4}$	1,800
Siding, from inch stock.....	1,000
Siding, from $1\frac{1}{4}$ inch stock.....	1,250
Drop Siding and Moulded Casing....	1,800
Moulded Base	2,000
Finish, inch, S 2 S.....	2,500
Finish, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch S 2 S....	2,700
Finish, inch, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch, rough.	3,100
Shiplap and D. & M.....	2,300
Grooved Roofing	2,400
Com. Boards and Fencing S 1 S or 2 S	2,500
Com. Boards and Fencing, rough....	3,200
2x4, 2x6 and 2x8, S 1 S 1 E to $1\frac{5}{8}$	2,500
2x4, 2x6 and 2x8 rough.....	3,200
2x10 and 2x12, S 1 S 1 E to $1\frac{5}{8}$	2,600
2x10 and 2x12, rough.....	3,200
2x14 and 3x12, S 1 S 1 E.....	3,200
2x14 and 3x12, rough.....	3,700
3x4 and 6x6, S 1 S 1 E.....	3,200
4x4 and 6x8, rough.....	4,000
8x8 and over, rough.....	4,000

Revised and adopted at Memphis, January 15, 1902.

EXPORT CLASSIFICATION.

GENERAL RULES.

1. The term "Resawn lumber" shall include all of the sizes referred to in this classification.
2. All resawn lumber must be sound, well manufactured, evenly sawn, square butted with saw, square edge unless otherwise specified, free from unsound, loose and hollow knots, worm and knot holes, through splits and through shakes.
3. Unless otherwise specified lumber shall be 12 feet and up long. All fractional sizes not herein otherwise provided for shall be classed and inspected as the next lower size if the fraction is less than half the difference between the two sizes given in the classification, but if it is half the difference, or more, it shall be classed as the next size above. All sizes one inch or less in thickness shall be counted as one inch thick.
4. In the measurement of dressed lumber, the width and thickness of the lumber before dressing must be taken, less than one inch thick being considered one inch.
5. When the term "per cent." is used reference is made to pieces; for example, "80% free from knots" means that 80 of every 100 pieces shall be free from knots.

6. The limitation as to size and number of knots refers to the heart face. In the measurement of knots the average diameter must be taken. The distribution of knots need not be proportionate, i. e., one knot to each six feet or fraction thereof, means that a piece 24 feet long may have four knots anywhere in the piece and not one knot in each separate six feet. The allowance of one knot $1\frac{1}{2}$ inches in diameter to six feet means that the piece may have one knot $1\frac{1}{2}$ inches or a greater number of less than $1\frac{1}{2}$ inches but not exceeding the equivalent. In the limitations as to size, number and percentage free from knots, no account shall be taken of knots one-half (or less) of the diameter of the maximum knot allowed in the grade, or, if no knots are allowed, of the maximum knot in the next grade below. Provided, that knots covered by this exception shall not exceed three-fourths inch in diameter.

7. In dimension where wane is allowed it shall not exceed one inch wide on the smallest size, allowing half inch increase to every inch increase in the dimension. Wane allowed may be anywhere on the corner and need not be continuous, but the aggregate must not exceed the total allowance. The larger dimension of the piece must be taken in the calculation of wane. Wane shall be measured across its face.

8. When there is a percentage free from knots or centres, reference is made to the least thickness, the percentage to be decreased 10 for each inch increase in the thickness, and proportionately for fractions of inches.

ROUGH FLOORING.

SIZES.

1x3, 1x3½, 1x4, 1x4½, 1x5, 1x6.
 $1\frac{1}{4}$ x3, $1\frac{1}{4}$ x3½, $1\frac{1}{4}$ x4, $1\frac{1}{4}$ x4½, $1\frac{1}{4}$ x5, $1\frac{1}{4}$ x6.
 $1\frac{1}{2}$ x3, $1\frac{1}{2}$ x4, $1\frac{1}{2}$ x5, $1\frac{1}{2}$ x6.
 $1\frac{3}{4}$ x3, $1\frac{3}{4}$ x4, $1\frac{3}{4}$ x5, $1\frac{3}{4}$ x6.

GRADES.

Rift, Special, Standard and Square Edge.

Rift.

Rift—No. 1.—Must be all heart with exception of one inch sap on one corner, rift grain the entire length, free from splits, shakes and knots, and the heart face free from pitch pockets and resin streaks.

No. 2.—Must be one heart face, rift grain the entire length, free from splits, shakes and knots exceeding one-half inch. Provided, that 50 per cent. shall be free from knots, pitch pockets and resin streaks on the heart face.

Special.—Must be bright, one heart face, free from splits, shakes and centres. Not to have more than one knot one inch on the 3, 3½, 4 and 4½ inch, or one knot $1\frac{1}{4}$ inch on the five and six inch to each six feet or fraction thereof. Provided, that 80 per cent. shall be free from knots.

Standard or South American.—Must be one heart face admitting sound knots.

Square Edge.—General rules, second paragraph.

BOARDS AND PLANKS.

SIZES OF BOARDS.

1x7 and up; $1\frac{1}{4}$ x7 and up; $1\frac{1}{2}$ x7 and up; $1\frac{3}{4}$ x7 and up.

SIZES OF PLANKS.

2x7 and up; $2\frac{1}{4}$ x7 and up; $2\frac{1}{2}$ x7 and up; $2\frac{3}{4}$ x7 and up.

GRADES.

Stepping, Special Prime, Prime, Standard or Genoa Prime, Merchantable or South American, and Square Edge.

Stepping.—Must be three corners heart, free from pitch on the faces, splits and shakes. Not to have more than one knot one-half inch on the seven to ten inch, or one knot three-fourth inch on the eleven-inch and up, to each six feet or fraction thereof. Provided, that 50 per cent. shall be free from knots.

Special—Boards.—Must be bright, one heart face, except sap one inch wide, free from splits, shakes and centres. Not to have more than one knot one inch on the seven to 10-inch or one knot $1\frac{1}{4}$ inch on the 11-inch and up, to each six feet or fraction thereof. Provided, that 80 per cent. shall be free from knots.

Planks.—Must be bright, one heart face, except sap one inch wide, free from splits, shakes and centres. Not to have more than one knot $1\frac{1}{4}$ inch on the 7 to 10-inch or one knot $1\frac{1}{2}$ inch on the 11-inch and up, to each six feet or fraction thereof. Provided, that 80 per cent. shall be free from knots.

Prime—Boards.—Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from pith on the faces, splits and injurious open shakes. Not to have more than one knot $1\frac{1}{4}$ inch on the seven to 10-inch or one knot $1\frac{1}{2}$ inch on the 11-inch and up, to each six feet or fraction thereof.

Planks.—Must be one heart face and two-thirds heart surface on other face, to show heart the entire length, free from pith on the faces, splits and injurious open shakes. Not to have more than one knot one and a half inches on the seven to ten-inch or one knot one and three-quarter inches on the eleven-inch and up, to each six feet or fraction thereof.

Standard or Genoa Prime.—Must be one heart face and two-thirds heart surface on other face, except that the twelve-inch may have one inch sap on each edge of the heart face and the thirteen-inch and up one and one-half inches.

Merchantable or South American.—The seven to nine-inch must be one heart face and show heart on other face, and the ten-inch and up must be two-thirds heart surface on both faces.

Square Edge.—General rules, second paragraph.

DEALS.

Sizes.—3x9 and up, 4x9 and up, 5x9 and up.

GRADES.

Special, prime, standard or Rio, merchantable or South American and square edge.

Special.—Must be bright, one heart face, free from splits, shakes and centres. Not to have more than one knot one and a half inches on the three and four-inch or one knot one and three-quarter inches on the five-inch to each six feet or fraction thereof. Provided that 70 per cent. shall be free from knots.

Prime.—Must be one heart face, and two-thirds heart surface on other face, to show heart the entire length, free from injurious open shakes, and knots exceeding two inches on the three and four-inch, or two and a quarter inches on the five-inch.

Standard or Rio.—Must be one heart face and two-thirds heart surface on other face, except that the twelve-inch may have one-inch sap on each edge of the heart face and the thirteen-inch and up one and a half inches.

Merchantable or South American.—The nine-inch must be one heart face and show heart on other face, and the ten-inch and up must be two-thirds heart surface on both faces.

Square Edge.—General rules, second paragraph.

SCANTLING.

SIZES.

2x2, 2x3, 2x4, 2x5, 2x6; 3x3, 3x4, 3x5, 3x6, 3x7, 3x8; 4x4, 4x5, 4x6, 4x7, 4x8; 5x5, 5x6, 5x7, 5x8.

GRADES.

Decking, prime, merchantable and square edge.

Decking.—Must be all heart, free from splits, shakes, centres and corner knots. The 2x2, 2x3 and 2x4 to have no knots exceeding three-quarters of an inch, the 2x5, 2x6, 3x3, 3x4, 3x5 and 3x6 no knots exceeding one inch, and other sizes no knots exceeding one and a half inches.

Prime.—Must be three corners heart.

Merchantable or South American.—Must be heart one edge or one face and free from loose and unsound knots.

Square Edge.—General rules, second paragraph.

DIMENSION.

SIZES.

A	B	C
6x6	6x7	6x8 6x9
7x7	7x8	7x10 and up
8x8	8x9	8x11 and up
9x9	9x10	9x12 and up
10x10	10x11	10x13 and up
11x11	11x12	11x14 and up
12x12	12x13	12x15 and up
13x13	13x14	13x16 and up
Etc.	Etc.	Etc.

GRADES.

Prime, standard, merchantable and square edge.

Prime—Sizes A.—Must show two-thirds heart surface on two sides, and not less than half heart surface on two other sides.

Sizes B.—Must show two-thirds heart surface on faces, and show heart two-thirds of the length on edges.

Sizes C.—Must show two-thirds heart surface on faces, and show heart half the length on edges.

Standard.—Must show two-thirds heart surface on two sides, and show heart half the length on other two sides. Sizes ten inches or over may have wane one-fifth the length on one corner, or one-tenth on two corners.

Merchantable or South American.—Must be square edge except that sizes ten inches or over may have wane one-third the length on one corner, or one-sixth on two corners, or one-ninth on three corners.

Square Edge.—General rules, second paragraph.

SAWN TIMBER.

To be sold as per general rules unless otherwise provided for by special contract between buyer and seller.

KILN-DRIED SIDINGS.

SIZES.

1x3, 1x4, 1x5, 1x6, 1x7 and up; 1¼x3, 1¼x4, 1¼x5, 1¼x6, 1¼x7 and up.

GRADES.

No. 1.—Must be free from splits and edge knots. Not to have more than one knot one inch on the three and four-inch, or one knot one and a quarter inches on the five, six, seven-inch and up, to each six feet or fraction thereof. Provided, that 80 per cent. shall be free from knots and sap stains on one face; slight wane that can be removed in dressing to be admitted on edge of poorest face.

No. 2.—Must be free from splits and knots exceeding one and a quarter inches, and sap stain on one face. May have one and a half inches of wane on one corner extending on edge three-eighths of an inch.

GRADING RULES FOR YELLOW PINE LUMBER.

General Instructions.

1. **Yellow Pine Lumber** shall be graded and classified according to the following rules and specifications as to quality, and dressed stock shall conform to the subjoined table of standard sizes—except where otherwise expressly stipulated between buyer and seller.

2. Recognized defects in yellow pine are knots, knot holes, splits (either from seasoning, ring hearts or rough handling), shake, wane, red heart, pith, rot, rotten streaks, worm-holes, pitch streaks, pitch pockets, torn grain, loosened grain, seasoning or kiln checks, and sap stains.

KNOTS.

3. Knots shall be classified as pin, standard and large, as to size; and sound and spike as to form; and as sound, loose, encased, pith and rotten as to quality.

4. A pin knot is sound and not over half-inch in diameter.

5. A standard knot is sound and not over one and a half inches in diameter.

6. A large knot is one any size over one and a half inches in diameter.

7. A round knot is oval or circular in form.
8. A spike knot is one sawn in a lengthwise direction.
The mean or average diameter of knots shall be considered in applying and construing the rules.
9. A sound knot is one solid across its face, is as hard as the wood it is in, may be either red or black, and is so fixed by growth or position that it will retain its place in the piece.
10. A loose knot is one not held firmly in place by growth or position.
11. A pith knot is a sound knot with a pith hole not more than one-quarter of an inch in diameter in the center.
12. An encased knot is one surrounded wholly or in part by bark or pitch. Where the encasement is less than one-eighth of an inch in width on both sides, not exceeding one-half the circumference of the knot, it shall be considered a sound knot. (See sections 9 and 16.)
13. A rotten knot is one not as hard as the wood it is in.

PITCH.

14. Pitch pockets are openings between the grain of the wood containing more or less pitch or bark, and shall be classified as small, standard and large pitch pockets.
15. A small pitch pocket is one not over one-eighth of an inch wide.
A standard pitch pocket is one not over three-eighths of an inch wide, or three inches in length.
A large pitch pocket is one over three-eighths of an inch wide or over three inches in length.
16. A pitch pocket showing on both sides of the piece one-eighth of an inch or more in width shall be considered the same as a knot-hole.
17. A pitch streak is a well-defined accumulation of pitch at one point in the piece, and when not sufficient to develop a well-defined streak, or where fiber between grains is not saturated with pitch, it shall not be considered a defect.
18. A small pitch streak shall be equivalent to not over one-twelfth the width and one-sixth the length of the piece it is in.
A standard pitch streak shall be equivalent to not over one-sixth the width and one-third of the length of the piece it is in.

WANE.

19. Wane is bark, or the lack of wood, from any cause, on edge.

SAP.

20. Bright sap shall not be considered a defect in any of the grades provided for and described in these rules. The restriction or exclusion of bright sap constitutes a special class of material which can only be secured by **special contract**.
21. Sap stain shall not be considered a defect in any of the grades of common lumber.

MISCELLANEOUS.

22. Firm red heart shall not be considered a defect in any of the grades of common lumber.
23. Defects in rough stock caused by improper manufacture and drying will reduce grade, unless they can be removed in dressing such stock to standard sizes.
24. All stock, except Dimension, shall be inspected on the face side to determine the grade. Stock surfaced one side, the dressed surface shall be considered the face side. Stock rough or dressed two sides, the best side shall be considered the face, but the reverse side of all such stock should not be more than one grade lower.
25. Imperfect manufacture in dressed stock, such as torn grain, loosened grain, wane, broken knots, mismatched, insufficient tongue or groove on flooring, ceiling, drop siding, etc., shall be considered defects, and will reduce grade according as they are slight or serious in their effects on the use of the stock.
26. Pieces of flooring, drop siding or partition with 3-16-inch or more of tongue and pieces of ceiling with one-eighth inch or more of tongue will be admitted in any grade. Pieces of flooring having not less than 1-16-inch tongue will be admitted in E. Pieces of drop siding, ceiling or partition, having not less than 1-16-inch tongue will be admitted in No. 2 common.
27. In all grades of D. and better, flooring and No. 1 common and better, ceiling drop siding, etc., wane on the reverse side, not exceeding one-third the width and one-sixth the length of any piece, provided the wane does not extend into the tongue, nor over one-half the thickness below the groove, is admissible.

28. Chipped grain consists in a part of the surface being chipped or broken out in small particles below the line of the cut, and as usually found should not be classed as torn grain and shall not be considered a defect.

29. Torn grain consists in a part of the wood being torn out in dressing. It occurs around knots and curly places, and is of four distinct characters—slight, medium, heavy and deep.

Slight torn grain should not exceed 1-32 of an inch in depth, medium 1-16 of an inch, and heavy $\frac{1}{8}$ of an inch. Any torn grain heavier than $\frac{1}{8}$ of an inch shall be termed deep.

30. Loosened grain consists in a point of one grain being torn loose from the next grain. It occurs on the heart side of the piece, and is a serious defect, especially in flooring.

31. The grade of all regular stock shall be determined by the number, character and position of the defects visible in any piece. The enumerated defects herein described admissible in any grade are intended to be descriptive of the **coarsest pieces such grades may contain**, but the average quality of the grade should be about midway between the highest and lowest pieces allowed in the grade.

32. Lumber and timber sawed for specific purposes must be inspected with a view to its adaptability for the use intended. Material not conforming to standard sizes, for agricultural implement companies, wagon companies, car manufacturing companies, railway companies, etc., shall be governed by special contract and inspection.

33. The standard lengths are multiples of two feet, ten to twenty-four feet, inclusive, for boards, fencing, dimension, joists and timbers, and multiples of one foot, ten to twenty foot inclusive for finishing, flooring, ceiling, siding, partition, casing, base window and door jambs—except as hereinafter specified. Longer or shorter lengths than those herein specified are special. Odd and fractional lengths shall be counted as of the next higher even length.

34. The standard of widths for lumber S. 1 S. or S. 2 S. or rough, excluding dimension, shall be multiples of one inch—three inches and up in width.

35. On stock width shipments of No. 1 common and better lumber, either rough or dressed one or two sides, no piece should be counted as of standard width that is more than one-fourth-inch scant on eight-inch and under; three-eighth-inch scant on nine and ten-inch, or half-inch scant on eleven and twelve-inch or wider. Such pieces should be measured as of the next lower standard of width and not reduced in grade. (For dimension see sections 84 and 91.)

36. Yellow pine of a better grade than No. 1 common, up to four inches in width shall be classified as to grain as edge grain and flat grain. Edge grain has been variously designated as rift sawn, vertical grain, quarter sawn, all being commercially synonymous terms. Edge grain stock is especially desirable for flooring and admits no piece in which the angle of the grain exceeds 45 degrees from vertical at any point, thus excluding all pieces that will sliver or shell from wear. Such as will not meet these requirements shall be known as flat grain.

37. All dressed stock shall be measured and sold strip count, viz., full size of rough material necessarily used in its manufacture.

All sizes one inch or less in thickness shall be counted as one inch thick.

38. In standard manufacture of factory flooring, decking or thick dressed and matched stock, and stock grooved for splines, and for shiplap, the finished width shall be half-inch less over all than the count or measured width of the rough material used in manufacture, and the tongue and lap shall be measured to determine the finished width, and face measure shall no longer be standard.

39. Equivalent means equal, and in construing and applying these rules, the defects allowed, whether specified or not, are understood to be equivalent in damaging effect to those mentioned applying to stock under consideration.

No arbitrary rules for the inspection of lumber can be maintained with satisfaction. The variations from any given rule are numerous and suggested by practical common sense, so nothing more definite than the general features of different grades should be attempted by rules of inspection. The following, therefore, are submitted as the general characteristics of the different grades.

Lumber must be accepted on grade in the form in which it was shipped. Any subsequent change in manufacture or mill work will prohibit an inspection for the adjustment of claims, except with the consent of all parties interested.

40. The foregoing general observations shall apply to and govern the application of the following rules:

DRESSED YELLOW PINE FINISHING.

Sizes.—Finishing shall be dressed to the following: 1 inch S. 1 S. or 2 S. to 13-16 1¼-inch S. 1 S. or 2 S. to 11-16, 1½-inch S. 1 S. or 2 S. to 15-16, 2-inch S. 1 S. or 2 S. to 1¾ inches. 2-inch S. 4 S. ¼ off each edge.

Widths.—On stock width shipments of all finishing lumber, either rough or dressed, one or two sides, no piece should be counted as standard width that is more than ¼-inch scant on 8-inch and under; ⅜-inch scant on 9 or 10-inch, or ½-inch scant on eleven or twelve-inch or wider. Such pieces should be measured as of the next lower standard of width and not reduced in grade.

Lengths.—Standard lengths are ten to twenty feet, and in shipments of mixed lengths, 5 per cent. of eight or nine-foot in grade of C and better shall be admitted.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

Grades.—A, B and C.

41. **A Finishing.**—Inch, one and a quarter, one and a half and two-inch, dressed one or two sides, up to and including eight inches wide, must show one face practically clear of all defects; nine or ten inches wide, in addition to one split not more than six inches long, will admit any one of the following defects: One small pitch pocket, one pin knot, pitch streak or sap stain not to exceed the equivalent of six square inches. One-third of any shipment of 11, 12, 13 and 14-inch, in addition to one straight split not to exceed in length the width of the piece, will admit any one of the following defects or its equivalent: Three pin knots, one standard knot, three small pitch pockets or one standard pitch pocket, one small pitch streak, small kiln or seasoning checks, one sap stain one and a half inches wide running across the face of the piece.

For each inch above fourteen inches in width, one additional defect as allowed in twelve-inch stock will be admitted. Pieces otherwise admissible, which have loosened or torn grain on the face side shall be put in a lower grade.

42. **B Finishing.**—Inch, 1¼, 1½ and 2-inch, dressed one or two sides, up to and including ten inches in width, in addition to one straight split not to exceed in length the width of the piece, will admit any two of the following or their equivalent of combined defects: Slight torn grain, three pin knots, one standard knot, three small pitch pockets, one standard pitch pocket, one standard pitch streak, three sap stains two inches wide across the face or sap stain not over eight inches deep on one end, wane not to exceed one inch in width, one-quarter-inch in depth and one-sixth the length of the piece, or small kiln or seasoning checks. Eleven inch and wider will admit three of the above defects or their equivalent.

43. **C Finishing.**—Up to and including ten-inch in width will admit in addition to one split not to exceed in length the width of the piece, any two of the following or their equivalent of combined defects: Twenty-five per cent. of sap stain or firm red heart, two standard pitch streaks, medium torn grain in three places in one piece, slight shake or kiln or seasoning checks that do not go through, two standard pitch pockets, or six small pitch pockets, two standard knots or six pin knots, wane one inch in width, half-inch in depth and one-third the length of the piece. Defective dressing will also be allowed that does not prevent its use as finish without waste. For each inch in width above ten inch one additional defect or its equivalent of combined defects as enumerated above will be allowed.

44. **Special.**—In case both sides are desired clear special contract must be made. Defective dressing on the reverse side of finishing is admissible. (See section 24.)

FLOORING.

Sizes.—D and better, 1x3, 1x4 and 1x6 inches shall be worked to 13-16x2¼, 3¼ and 5¼ inches; 1¼-inch flooring shall be worked to 1 3-32 inches thick.

Lengths.—Standard lengths are ten to twenty foot. Five per cent. of eight or nine foot is allowed in mixed length shipments of B and better flooring, and in addition five per cent of six or seven foot in C and D and five per cent. of four or five foot in E.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

Grades.—A, B and C flat, A, B, and C edge grain, D and E.

Special Section.—Defects named in flooring are based upon a piece manufactured from 1x4—12, and pieces larger or smaller than this will take a greater or less number of defects, proportioned to their size on this basis.

45. **A Flat Flooring** must be practically free from defects on the face side and well manufactured.

46. **B Flat Flooring** will admit any two of the following or their equivalent of combined defects: Sap stain or firm red heart not to exceed 15 per cent of the face, three pin knots, one standard knot, three small pitch pockets, one standard pitch pocket, one standard pitch streak, slight torn grain, or small kiln or seasoning checks.

Pieces otherwise good enough for A, but containing not over six small pin worm-holes shall be admitted in B.

47. **C Flat Flooring** will admit any two of the following defects or their equivalent of combined defects: Twenty-five per cent of sap stain, pitch streaks or firm red heart, medium torn grain, or other machine defects that lay without waste, slight shake or kiln or seasoning checks that do not go through; two standard or six small pitch pockets; two standard knots or six pin knots. Pieces otherwise as good as B may have thirty pin worm-holes. Pieces otherwise as good as A may have forty pin worm-holes. A piece otherwise as good as A may have 1½-inch of waste such as a loose knot or knot hole.

48. **Edge Grain Flooring, A, B and C** shall take the same inspection as flat grain of those grades, except as to the angle of the grain.

49. Heart face edge grain shall be free from sap on face side.

50. **D Flooring** will admit the following defects or their equivalent of combined defects: Sound knots not over one-half the cross section of the piece in the rough at any one point throughout its length, three pith knots, pitch, pitch pockets, sap stain, firm red heart, seasoning checks or shake that do not go through, a limited number of pin worm-holes well scattered, loosened or heavy torn grain, or other machine defects that will lay without waste; pieces otherwise as good as B can have one defect (like a knot hole) that can be cut out by wasting three inches of the length of the piece.

51. **E Flooring** admits all pieces that will not grade as good as D flooring, that can be used for cheap floors without a waste of more than one-fourth the length of any one piece. (See section 26.)

52. **E Sheathing** will admit of all pieces that can not be used as E flooring, but are still available as cheap sheathing or lathing.

53. **Center Matched Flooring** shall be required to come up to grade on face side only.

CEILING.

Sizes.—Ceiling shall be worked to the following: ⅜-inch ceiling, 5-16 inch; ½-inch ceiling, 7-16 inch; ⅝-inch ceiling, 9-16 inch; ¾-inch ceiling, 11-16 inch. Same width as flooring. The bead on all ceiling and partition shall be depressed 1-32 of an inch below surface line of piece. (For size and location of bead see section 106.)

Lengths.—Standard lengths are ten to twenty foot. Five per cent. of eight or nine foot is allowed in mixed lengths shipments of B and better ceiling, and in addition 5 per cent. of six or seven foot in No. 1 common; and 5 per cent. of four or five foot in No. 2 common.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

Grades.—A, B, No. 1 and No. 2 common.

Special Section.—Defects named in ceiling are based upon a piece manufactured from 1x4—12, and pieces larger or smaller than this will take a greater or less number of defects, proportioned to their size on this basis.

54. **A Ceiling** must be practically free from defects on the face side, and well manufactured.

55. **B Ceiling** will admit of any two of the following defects or their equivalent of combined defects: Slight torn grain, three pin knots, one standard knot, three small pitch pockets, one standard pitch pocket, one small pitch streak, small seasoning or kiln checks, sap stain or firm red heart not to exceed 15 per cent. of the face.

Pieces otherwise good enough for A, but containing ten small pin worm holes shall be admitted in B.

56. **No. 1 Common Ceiling** will admit sound knots not over one-half the width of piece in the rough, sap stain, pitch streaks, pitch pockets, firm red heart, slight shake, heavy torn grain, kiln or seasoning checks, or defects in manufacture.

Pieces otherwise good enough for A, but containing one loose or unsound knot or knot hole one and a half inches in diameter or less, shall be graded No. 1 common.

Pieces otherwise good enough for B, but containing twenty small pin worm-holes, shall be graded No. 1 common.

57. **No. 2 Common Ceiling** admits of all pieces not as good as No. 1 common that can be used without waste of more than one-fourth the length of any one piece. (See section 26.)

WAGON BOTTOMS.

Sizes.—Unless otherwise ordered (see section 32), shall be made in sets thirty-eight and forty-two inches face, and from stock four inches or over in width. Standard thickness shall be 13-16-inch.

Grades.—A and B.

58. **Wagon Bottoms**, unless otherwise ordered (see section 32), shall be graded the same as A and B flat flooring.

DROP SIDING.

Sizes.—D. and M. shall be worked to $\frac{3}{4} \times 3\frac{3}{4}$ and $5\frac{1}{4}$ -inch face, $5\frac{1}{2}$ over all. Worked shiplap to $\frac{3}{4} \times 5$ -inch face, $5\frac{1}{2}$ over all.

Lengths.—Standard lengths ten to twenty foot. Five per cent. of eight or nine foot is allowed in mixed length shipments of B and better drop siding, and in addition 5 per cent. of six or seven foot in No. 1 common and 5 per cent. of four or five foot in No. 2 common.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

Grades—A, B, No. 1 and No. 2 common.

Special Section.—Defects named in drop siding are based upon a piece manufactured from 1x6—12, and pieces larger or smaller than this will take a greater or less number of defects, proportioned to their size on this basis.

For grades of 8-inch barn siding, see sections 69 and 71. For size see section III.

59. **A Drop Siding** must be practically free from defects on the face side and well manufactured.

60. **B Drop Siding** will admit any two of the following defects, or their equivalent of combined defects: Slight torn grain, three pin knots, one standard knot, three small pitch pockets or one small pitch streak, sap stain or firm red heart not to exceed 15 per cent. of the face, and small kiln and seasoning checks.

Pieces otherwise good enough for A, but containing twenty small pin worm holes shall be admitted in B.

61. **No. 1 Common Drop Siding** will admit one standard pitch streak or one standard pitch pocket, or their equivalent; and in addition, sound knots not over one-half the width of piece in the rough, sap stain, firm red heart, slight shake, heavy torn grain, defects in manufacture and kiln or seasoning checks.

Pieces otherwise good enough for A, but containing one loose or unsound knot or knot hole, one and a half inches in diameter or less, shall be graded No. 1 common.

Pieces otherwise good enough for B, but containing a limited number of small pin worm holes, shall be graded No. 1 common.

62. **No. 2 Common Drop Siding** admits of all pieces not as good as No. 1 common that can be used without waste of more than one-fourth the length of any one piece.

BEVEL SIDING.

Size.—To be made from stock S. 4 S. worked to $13-16 \times 5\frac{1}{2}$ and resawed on a bevel.

Lengths.—Standard lengths ten to twenty foot. Five per cent. of eight or nine foot is allowed in mixed length shipments of B and better bevel siding and in addition 5 per cent of six or seven foot in No. 1 common, and 5 per cent of four or five foot in No. 2 common.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

Grades—A, B, No. 1 and No. 2 common.

63. **Bevel Siding** shall be graded according to the rules for drop siding, and will admit in addition slight imperfections on the thin edge, which will be covered by the lap when laid four and a half inches to the weather.

PARTITION.

Sizes.—Partition shall be worked to $\frac{3}{4} \times 3\frac{3}{4}$ and $5\frac{1}{4}$ inches. (For size and location of bead, see sections 106 and 107.)

Lengths.—Same percentage of short lengths allowed as in ceiling.

Grades—A, B, No. 1 and No. 2 common.

64. **Partition** shall be graded according to ceiling rules, and must meet the requirements of the specified grades on the face side only, but the reverse side shall not be more than one grade lower.

MOULDED CASING AND BASE—WINDOW AND DOOR JAMBS.

Sizes of Moulded Casing and Base.—Shall be worked to $\frac{3}{4}$ -inch, as per patterns shown in Yellow Pine Manufacturers' Association Moulding Book, 1906 edition. (See section 37.) 1x4 S. 4 S. shall be $3\frac{1}{2}$ inches wide, finished; 1x5 S. 4 S. shall be $4\frac{1}{2}$ inches wide finished, and 1x6 S. 4 S. shall be $5\frac{1}{2}$ inches wide, finished.

Window and Door Jambs.—(See section 37.) Dressed, rabbeted and plowed as ordered.

Grades—A and B.

65. **A Moulded Casing and Base** must be practically free from defects on the face side and well manufactured.

66. **B Casing or Base** consists of rejections made after dressing stock inspected in the rough as A. The defects admitted in B ceiling shall be allowed.

67. **Window and Door Jambs** shall be graded the same as moulded casing and base. See section 37 for width.

BOARDS, SHIPLAP AND BARN SIDING.

Sizes of Boards.—1-inch S. 1 S. or 2 S. to 13-16-inch.

Widths.—On stock width shipments of No. 1 common, either rough or dressed one or two sides, no piece should be counted as standard width that is more than one-quarter inch scant on eight-inch and under; three-eighth-inch scant on nine or ten-inch, or half-inch scant on eleven or twelve-inch or wider. Such pieces should be measured as of the next lower standard of width and not reduced in grade.

Sizes of No. 1 Common Shiplap or D. & M. and Barn Siding.—Eight, ten and twelve-inch shall be worked to 13-16, $7\frac{1}{8}$, $9\frac{1}{8}$ and $11\frac{1}{8}$ inches.

Grades—No. 1, No. 2, No. 3 and No. 4 common.

68. **No. 1 Common Boards**, dressed one or two sides, shall be well manufactured; will admit any number of sound knots, not over one-fourth of the cross-section of the piece if located at the edge, nor over one-third of the cross-section of the piece if located away from the edge; two pith knots, one straight split not to exceed in length the width of the piece, torn grain, pitch, pitch pockets, slight shake, sap stain, seasoning checks, firm red heart, wane half-inch deep on edge, not exceeding one and a half inches wide, and one-third the length of the piece or its equivalent, and a limited number of pin worm-holes well scattered.

69. **No. 1 Common Shiplap or D. & M. and Barn Siding** shall be graded by rules governing No. 1 common boards, except as to wane, which shall not be so deep as to extend into the tongue or one-half the thickness of the top lip on the groove in D. & M., or over one-half the thickness of the lap in shiplap on the face side.

GROOVED ROOFING.

Size of Grooved Roofing.—Ten and twelve-inch S. 1 S. and 2 E. shall be worked to 13-16x $9\frac{1}{2}$ and $11\frac{1}{2}$.

70. **Grooved Roofing** shall be graded by rules governing No. 1 common boards, omitting the pith knots, worm-holes and splits in end.

No. 2 COMMON BOARDS, SHIPLAP, GROOVED ROOFING AND BARN SIDING.

Size.—S. 1 S. or S. 2 S. to 13-16.

Widths.—On stock width shipments of No. 2 common, either rough or dressed one or two sides, no piece should be counted as standard width that is more than half-inch scant on eight-inch and under; five-eighths on nine or ten-inch and three-quarter-inch on eleven and twelve-inch or wider. Such pieces should be measured as of the next lower standard of width and not reduced grade.

71. **No. 2 Common Boards**, dressed one or two sides, **No. 2 Common Shiplap, Grooved Roofing, D. & M. and Barn Siding** will admit knots, not necessarily sound, none of which is over one-third the cross-section of the piece, if located at the edge, or one-half the cross section if located away from the edge; if sound may extend one-half the cross section if located on the edge; worm-holes, splits or through rotten streaks one-fourth the length of the piece, through heart shakes, and wane two inches wide, one-half the length of the piece, or defects equivalent to the above.

A knot hole three inches in diameter will be admitted, provided piece is otherwise as good as No. 1 common.

72. **No. 3 Boards** is defective lumber, and will admit of coarse knots, knot holes, very wormy pieces, red rot and other defects that will not prevent its use as a whole for cheap sheathing, or cutting three-fourths its length as No. 2 common.

73. **No. 4 Boards** shall include all pieces that fall below the grade of No. 3 common. It is the lowest recognized grade and it is offered on its merits as defective lumber.

74. Miscut 1-inch boards which do not fall below three-quarters of an inch in thickness shall be admitted in No. 2 common, provided the grade of such thin stock is otherwise as good as No. 1 common.

FENCING 3, 4, 5 AND 6 INCHES WIDE.

Sizes.—One-inch S. 1 S. or 2 S. to 13-16 inch.

Widths.—On stock width shipments of 3, 4, 5 and 6-inch No. 1 common, no piece should be counted as standard width that is more than one-quarter of an inch scant in width. Such pieces should be measured as of the next standard of width and not reduced in grade.

Grades—No. 1, No. 2, No. 3 and No. 4 Common.

75. **No. 1 Fencing** will admit the following defects or their equivalent: Sound knots, not over one-half the cross-section of piece at any point throughout its length; three pith knots, or their equivalent, wane one-half inch deep on edge not exceeding one and a half inches wide and one-half of the length of the piece, torn grain, pitch, pitch pockets, sap stain, seasoning checks, firm red heart, and a limited number of small worm holes well scattered.

No. 2 FENCING.

Size.—S. 1 S. or 2 S. to 13-16 inch.

Widths.—In 3, 4, 5 and 6-inch No. 2 common stock, no piece shall be counted as standard width that is more than half-inch scant in width. Such pieces should be measured as of the next lower standard of width and not reduced in grade.

76. **No. 2 Fencing**, in addition to the defects allowed in No. 1 common, will admit the following defects or their equivalent: Knots, not necessarily sound, which do not occupy more than one-half of the cross-section at any one point if located at the edge of the piece nor more than two-thirds of the cross-section if located away from edge, one straight split one-fourth the length of the piece, worm-holes, rotten streaks that do not go through; shake and wane, but must be good enough to be used in full length as fencing.

A knot hole one and one-half inches in diameter or its equivalent in small hollow knots will be allowed, provided the piece is otherwise as good as No. 1 common.

77. **No. 3 Fencing** is defective lumber, and will admit of coarse knots, knot-holes, very wormy pieces, red rot and other defects that will not prevent its use as a whole for cheap sheathing, or cutting three-fourths its length as No. 2 common.

78. **No. 4 Fencing** shall include all pieces that fall below the grade of No. 3 common. It is the lowest recognized grade and it is offered on its merits as defective lumber.

79. Miscut 1-inch fencing which does not fall below three-quarters of an inch in thickness shall be admitted in No. 2 common, provided the grade of such thin stock is otherwise as good as No. 1 common.

DIMENSION, S. 1 S. 1 E.

Sizes.—Dimension shall be worked to the following: 2x4 S. 1 S. and 1 E. to $1\frac{5}{8} \times 3\frac{5}{8}$ inches; 2x6 S. 1 S. and 1 E. to $1\frac{5}{8} \times 5\frac{5}{8}$ inches; 2x8 S. 1 S. and 1 E. to $1\frac{5}{8} \times 7\frac{1}{2}$ inches; 2x10 S. 1 S. and 1 E. to $1\frac{5}{8} \times 9\frac{1}{2}$ inches; 2x12 S. 1 S. and 1 E. to $1\frac{5}{8} \times 11\frac{1}{2}$ inches. Dimension S. 4 S. $\frac{1}{8}$ -inch less than standard size S. 1 S. and 1 E.

Heavy Joists shall be worked to the following: 2x14, 2½ and 3x10, 12 and 14, S. 1 S. and 1 E., green, ¼-inch off side and ½-inch off edge. Heavy joists, rough, green, must not be over ¼-inch scant in width or thickness.

Dry 2x14 shall be dressed to the standard thickness of 2x12.

Grades—No. 1, No. 2 and No. 3 Common.

80. Inspection of Dimension is a question of strength and uniformity of size, and whatever reduces its strength in cross-section must be considered a defect to that extent. In computing the area of cross-section occupied by defects the size of the piece in the rough shall be considered.

81. **No. 1 Common Dimension** will admit sound knots, none of which in 2x4's should be larger than two inches in diameter on one or both sides of the piece, and on wider stock which do not occupy more than one-third of the cross-section at any point throughout its length if located at the edge of the piece; or more than one-half of the cross-section if located away from the edge; pith knots, or smaller or more defective knots which do not weaken the piece more than the knot aforesaid, will admit of seasoning checks, firm red heart, heart shakes that do not go through, wane three-quarters of an inch deep on edge, one-quarter the width and one-third the length of the piece, pitch, sap stains, pitch pockets, splits in ends not exceeding in length the width of the piece, a limited number of small worm holes well scattered, and such other defects as do not prevent its use as substantial structural material.

82. **No. 2 Common Dimension** may have knots, not necessarily sound, which do not occupy more than one-half of the cross-section at any one point if located at the edge of the piece, nor more than two-thirds of the cross-section if located away from the edge; smaller, loose, hollow or rotten knots that do not weaken the piece more than the knots aforesaid, will admit rotten streaks, shake, wane, worm holes, split not to exceed one-quarter the length of the piece, and other defects which do not prevent its use without waste.

83. **No. 3 Dimension** will include all pieces falling below No. 2 grade which are sound enough to use for cheap building material, by wasting 25 per cent of one-third of any item in a shipment, but it must not be more than a half-inch scant of standard finished width or three-eighth-inch scant in thickness.

84. Miscut two-inch stock which does not fall below one and a half inches in thickness or one-eighth-inch scant in width from standard size, shall be admitted in No. 2 common, provided such pieces are in all other respects as good as No. 1 common.

ROUGH YELLOW PINE FINISHING.

Width.—On stock width shipments of C and better finish, either rough or dressed one or two sides, no piece should be counted as standard width that is more than one-quarter of an inch scant on eight-inch and under; three-eighth-inch scant on nine and ten-inch, or half-inch scant on eleven and twelve or wider. Such pieces should be measured as of the next lower standard of width, and not reduced in grade.

Lengths.—Standard lengths are ten to twenty feet, and in shipments of mixed lengths 5 per cent of eight or nine foot in grades of C and better shall be admitted.

The above per cent. is allowed in all shipments of mixed lengths, even though the number of feet of each length in such shipment be specifically stated.

85. Finish must be evenly manufactured, and shall embrace all sizes from one to two inches in thickness by three inches and over in width.

86. No inch, $1\frac{1}{4}$ and $1\frac{1}{2}$ finishing lumber, unless otherwise ordered, shall measure when dry more than 1-16-inch scant in thickness; on two-inch it may be one-eighth-inch scant.

87. Wane and seasoning checks and other defects that will dress out in working to standard thickness and width are admissible.

88. Subject to the foregoing provisions, rough finishing shall be graded according to the specifications applying to dressed finishing lumber.

89. All rough finishing lumber, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

When like grade on both faces is required, special contract must be made.

COMMON BOARDS, FENCING AND DIMENSION.

90. Rough common boards and fencing must be well manufactured, and should not be less than seven-eighth-inch thick when dry.

91. Rough two-inch common shall be well manufactured, and not less than one and seven-eighth inches thick when green, or one and three-quarter inches thick when dry. The several widths must not be less than one-eighth-inch over the standard dressing width for such stock.

92. Rough common dimension of a greater thickness than two inches and less than four inches, shall be subject to special contract as to thickness and width.

93. **Rough Dimension**, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

94. The defects admissible in rough boards, fencing and dimension shall be the same as those applying to dressed stock of like kind and grade, and such further defects as would disappear in dressing to standard sizes of such material shall be allowed.

No. 1. COMMON TIMBERS.

Sizes.—Common timber shall be worked to the following: 4x4, 4x6, 6x6, $\frac{3}{8}$ -inch off side and edge. Surfaced four sides, $\frac{1}{4}$ -inch off each side; 6x8, and larger S. 4 S., $\frac{1}{4}$ -inch off each side surfaced.

95. **Rough Timbers**, 4x4 and larger, shall not be more than $\frac{1}{4}$ -inch scant at any point when green, and be well manufactured, with not less than three square edges, and will admit sound knots that do not occupy more than one-third the cross-section of the piece or small defective knots.

Timbers 10x10 in size may have a two-inch wane on one corner, measured on faces, or its equivalent on two or more corners one-third the length of the piece. Larger sizes may have proportionately greater defects.

Shakes extending not over one-eighth of the length of the piece are admissible, and seasoning checks shall not be considered a defect.

96. Dressed timbers shall conform in grading to the specifications applying to rough timbers of same size.

97. Rough timbers, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

98. **Yellow Pine Plastering Lath.**—No. 1 shall measure two inches in thickness to every five lath, green, the minimum thickness of any one lath shall not be less than 5-16 of an inch, green, and should not be less than 1 7-16 inches in width, green, length four feet; $1\frac{7}{8}$ inches thickness to every five lath, dry, and should not measure less than 1 5-16 inches in width dry. Will admit wane one-eighth of an inch deep, one-quarter of an inch on face and six inches long, pin worm-holes and one pin knot. Must not be more than half an inch scant in length. Blue sap stain shall not be considered a defect.

99. **No. 2** shall consist of pieces that fall below the grade of No. 1, which are not less than one and a quarter inches in width, one-quarter of an inch thick, when dry, and are not more than three-quarters of an inch short in length. Will admit wane, worm holes, knots and other defects that will not prevent their use the entire length without waste.

BYRKIT LATH.

Size.— $\frac{3}{4} \times 3\frac{1}{4}$ and $5\frac{1}{4}$ inches wide, length four feet and upward.

Grades—Standard and Merchantable.

100. **Standard** shall consist of such pieces as will be held firmly in place and support plaster by ordinary nailing and will present a full surface without any openings over three-eighths of an inch in diameter.

101. **Merchantable** shall consist of such pieces as fall below the grade of standard, yet can be used for the purpose intended by cutting out knot holes and other defects, by wasting not over sixteen inches of the length of any one piece.

STANDARD SIZES OF DRESSED LUMBER.

102. **Finishing** shall be dressed to the following: 1-inch S. 1 S. or 2 S. to 13-16, $1\frac{1}{4}$ -inch S. 1 S. or 2 S. to 1 1-16, $1\frac{1}{2}$ -inch S. 1 S. or 2 S. to 1 5-16, 2-inch S. 1 S. or 2 S. to $1\frac{3}{4}$ inches, 2-inch S. 4 S. $\frac{1}{4}$ off each edge.

103. **Moulded Casing and Base** shall be worked to $\frac{3}{4}$ -inch as per patterns shown in Yellow Pine Manufacturers' Association Moulding Book, 1906 edition. 1x4 S. 4 S. shall be three and a half inches wide finished; 1x5 S. 4 S. shall be four and a half inches wide, and 1x6 S. 4 S. shall be five and a half inches wide, finished.

104. **Flooring.**—The standard of 1x3, 1x4 and 1x6 inches D and better shall be worked to 13-16x $2\frac{1}{4}$, $3\frac{1}{4}$ and $5\frac{1}{4}$ inches; $1\frac{1}{4}$ -inch flooring shall be 1 3-32 inches thick.

105. **Drop Siding.** D. and M. shall be worked to $\frac{3}{4} \times 3\frac{1}{4}$ and $5\frac{1}{4}$ inches face, $5\frac{1}{2}$ over all. Worked shiplap, $\frac{3}{4} \times 5$ -inch face, $5\frac{1}{2}$ over all. Patterns that are not shown in Yellow Pine Manufacturers' Association Moulding Book of January, 1906, edition, are considered special.

106. **Ceiling** shall be worked to the following: $\frac{3}{8}$ -inch ceiling, 5-16-inch; $\frac{1}{2}$ -inch ceiling 7-16 inch; $\frac{5}{8}$ -inch ceiling, 9-16 inch; $\frac{3}{4}$ -inch ceiling 11-16 inch. Same width as flooring. The standard working of ceiling shall be beaded center and edge with slight bevel on groove edge. The bead on all ceiling and partition shall be depressed 1-32 of an inch below surface line of piece.

107. **Partition** shall be worked to the following: $\frac{3}{4} \times 3\frac{1}{4}$ and $5\frac{1}{4}$ inches. Same standard for location of and size of bead as applies to ceiling. (See section 106.)

108. **Bevel Siding.**—To be made from stock S. 4 S. worked to 13-16x $5\frac{1}{2}$ and resawed on a bevel.

109. **Window and Door Jambs.**—(See section 37.) Dressed, rabbeted and plowed as ordered.

110. **Boards and Fencing.**—One-inch S. 1 S. or 2 S. to 13-16 inch.

111. **Shiplap and Barn Siding No. 1 Common.** Eight, ten and twelve-inch shall be worked to 13-16x $7\frac{1}{8}$, $9\frac{1}{8}$ and $11\frac{1}{8}$ inches.

112. **D. and M. No. 1 Common.** 8, 10 and 12-inch. Shall be worked to the following: 13-16x $7\frac{1}{8}$, $9\frac{1}{8}$ and $11\frac{1}{8}$ inches.

113. **Grooved Roofing.** 10 and 12-inch S. 1 S. and 2 E. shall be worked to 13-16x $9\frac{1}{2}$ and $11\frac{1}{2}$.

114. **Wagon Bottoms**, unless otherwise ordered (see section 32), shall be made in sets 38 and 42 inches face, and from stock 4 inches or over in width. Standard thickness shall be 13-16 inch.

115. **Dimension** shall be worked to the following: 2x4 S. 1 S. and 1 E. to $1\frac{5}{8} \times 3\frac{5}{8}$ inches; 2x6 S. 1 S. and 1 E. to $1\frac{5}{8} \times 5\frac{5}{8}$ inches; 2x8 S. 1 S. and 1 E. to $1\frac{5}{8} \times 7\frac{1}{2}$ inches; 2x10 S. 1 S. and 1 E. to $1\frac{5}{8} \times 9\frac{1}{2}$ inches; 2x12 S. 1 S. and 1 E. to $1\frac{5}{8} \times 11\frac{1}{2}$ inches. Dimension S. 4 S. $\frac{1}{8}$ -inch less than standard size S. 1 S. and 1 E.

116. **Heavy Joists** shall be worked to the following: 2x14, $2\frac{1}{2}$ and 3x10, 12 and 14, S. 1 S. and 1 E., green, $\frac{1}{4}$ -inch off side and $\frac{1}{2}$ -inch off edge. Heavy joists, rough, green, must not be over $\frac{1}{4}$ -inch scant in width or thickness.

117. **Heavy Flooring.** For $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ -inch matching the thickness should be $\frac{3}{8}$ of an inch less than the rough material. The tongue should be $\frac{3}{8}$ -inch thick and $\frac{3}{8}$ -inch long. For 3-inch and thicker matching the tongue should be $\frac{3}{4}$ -inch thick and $\frac{3}{8}$ -inch long, and the thickness of the stock should be $\frac{3}{8}$ -inch less than the rough material. The groove in heavy matchings should be 1-16 inch wider than the thickness of the tongue, and 1-16 inch deeper than the length of the tongue. Tongue and groove shall be located one-fourth the thickness of the rough material from the bottom of the piece. In 2-inch and thicker material plowed for splines the groove should be the same width and depth as is provided for in matching material of the same thickness.

Dixie Wood-Worker

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118. **Timbers** shall be worked to the following: 4x4, 4x6, 6x6, $\frac{3}{8}$ -inch off side and edge. Surfaced 4 sides, $\frac{1}{4}$ -inch off each side. 6x8 and larger S. 4 S., $\frac{1}{4}$ -inch off each side surfaced.

119. **Yellow Pine Plastering Lath.** No. 1 shall measure two inches in thickness to every five lath, green, the minimum thickness of any one lath shall not be less than $\frac{5}{16}$ of an inch, green, and should not be less than $\frac{1}{2}$ inch in width, green, length 4 feet. $\frac{1}{8}$ inches thickness to every 5 lath, dry, and should not measure less than $\frac{1}{2}$ inch in width, dry. Must not be more than one-half of an inch scant in length when dry.

120. **No. 2** must not be less than $\frac{1}{4}$ inches in width, $\frac{1}{4}$ of an inch thick, when dry, and not more than $\frac{3}{4}$ inch short in length.

121. **Byrkit Lath.** $\frac{3}{4}$ x $3\frac{1}{4}$ and $5\frac{1}{4}$ inches wide, lengths 4 feet and upward.

PICKETS.

122. **Square Pickets.** From $1\frac{1}{2}$ -inch stock shall be worked to $1\frac{5}{16}$ x $1\frac{5}{16}$, 3 and 4 feet long, dressed on 4 sides and pointed. From $1\frac{1}{4}$ inch stock shall be worked to $1\frac{1}{16}$ x $1\frac{1}{16}$, 3 and 4 feet long, dressed on 4 sides and pointed.

123. **Flat Pickets.** From 1x3 stock shall be worked to $\frac{3}{4}$ x $2\frac{1}{4}$, 3 and 4 feet long, dressed on four sides and headed.

WESTERN PINE MANUFACTURERS' ASSOCIATION.

BUREAU OF GRADES.

It is the aim of the Bureau of Grades of the Western Pine Manufacturers' Association to adopt the grading rules in use by the Northern Pine Manufacturers' Association, except, that white sap in Western Pine shall not be considered a defect. And as there is an entire absence of shake in the Inland Empire products, pitch and season check defects shall be given equal consideration to shake defects as described in the examples and general rules of the Northern Pine Manufacturers' Association covering the various grades of their products.

CHECKED KNOTS AND SEASON CHECKS.

Checked knots in tight red knotted stock in common lumber shall not be considered a defect, unless the opening is so pronounced as to injure the piece for the purposes for which the grade was designed.

United States Postal Rules.

DOMESTIC AND FOREIGN MAIL MATTER.

Classification. Conditions. Rates of Postage.

GENERAL GUIDE TO CLASSIFICATION OF DOMESTIC MAIL MATTER

FIRST CLASS.

Includes all written matter, all matter closed against inspection, and all matter, though printed, which has the nature of actual and personal (individual) correspondence, except that certain writing or printing may be placed upon matter of the second, third, and fourth classes without increasing the rate. (See section 2.)

SECOND CLASS.

Includes all newspapers and periodicals which bear the authorized statement: "Entered at the post-office as second-class mail matter." (See section 2.)

THIRD CLASS.

Includes all printed matter upon paper not having the nature of actual, personal correspondence, except newspapers and periodicals bearing the statement: "Entered at the post-office as second-class matter.." (See section 2.)

FOURTH CLASS.

Includes all merchandise and all other matter not comprehended in the first, second, and third classes. (See section 2.)

Note.—Matter of a higher class inclosed with matter of a lower class subjects the whole package to the higher rate.

SECTION 1.—DOMESTIC MAIL MATTER.

Domestic mail matter includes all matter deposited in the mails for local delivery, or for transmission from one place to another within the United States, or to or from or between the possessions of the United States.

Porto Rico and Hawaii are included in the term "United States." The Philippine Archipelago, Guam, Tutuila (including all adjacent islands of the Samoan group which are possessions of the United States), and the Canal Zone are included in the term "Possessions of the United States." The term "Canal Zone" includes all the territory purchased from Panama, embracing the "Canal Zone" proper and the islands in the Bay of Panama named Perico, Naos, Culebra, and Flamenco.

Domestic rates of postage also apply to mail matter sent from the United States to Canada, Mexico, Cuba, and the United States postal agency at Shanghai, China.

SECTION 2.—CLASSIFICATION AND POSTAGE RATES.

Domestic mail matter is divided into four classes:

First Class.—Rate, 2 cents for each ounce or fraction. Limit of weight, 4 pounds. United States postal cards, 1 cent each; post cards, 1 cent each.

Includes: Letters, United States postal cards, post cards manufactured by private persons all matter sealed or otherwise closed against inspection, and all matter wholly or partly in writing, whether sealed or unsealed.

Note.—Typewriting and carbon and letterpress copies thereof are written matter and subject to the first-class rate. A printed communication having the character of actual personal correspondence is regarded as a letter.

Second Class—Unsealed.—Rate, 1 cent for each 4 ounces or fraction. Full prepayment required. No limit of weight.

This is the rate which applies to newspapers and other periodical publications bearing the printed statement "Entered at the post-office as second-class matter," etc., when they are mailed by the public.

Note.—The rates of postage on and the conditions applicable to second-class matter, when mailed by publishers or news agents, are not treated in this pamphlet.

Third Class—Unsealed.—Rate, 1 cent for each 2 ounces or fraction. Full prepayment required. Limit of weight 4 pounds, except it be a single book.

Includes: Books, newspapers and periodicals not admitted to the second class, circulars, miscellaneous printed matter on paper not having the nature of personal correspondence, and proof sheets, corrected proof sheets, and manuscript copy accompanying the same, and all matter in point print or raised characters used by the blind.

Fourth Class.—Unsealed.—Rate, 1 cent for each ounce or fraction, except seeds, bulbs, roots, scions, and plants, which are 1 cent for each 2 ounces or fraction. Full prepayment required. Limit of weight, 4 pounds.

Includes: All mailable matter not embraced in the first, second, and third classes.

MONEY ORDER FEES.

Fees for money orders payable in the United States (including Guam, Hawaii, Porto Rico, and Tutuila, Samoa); also for orders payable in Canada, Cuba, Newfoundland, the United States postal agency at Shanghai (China), and the Philippine Islands:

For sums not exceeding \$2.50.....	3 cents.
Over \$2.50 to \$5.....	5 cents.
Over \$5 to \$10.....	8 cents.
Over \$10 to \$20.....	10 cents.
Over \$20 to \$30.....	12 cents.
Over \$30 to \$40.....	15 cents.
Over \$40 to \$50.....	18 cents.
Over \$50 to \$60.....	20 cents.
Over \$60 to \$75.....	25 cents.
Over \$75 to \$100.....	30 cents.

FOREIGN.

Fees for foreign money orders when payable in Austria, Bahamas, Belgium, Bermuda, British Guiana, Bolivia, Chile, Costa Rica, Denmark, Egypt, Hungary, Jamaica, Japan, Leeward Islands, Liberia, Luxemburg, Mexico, Netherlands, New Zealand, Norway, Peru, Sweden, Switzerland, Transvaal, Trinidad, and Windward Islands:

For sums not exceeding \$10.....	8 cents.
Over \$10 to \$20.....	10 cents.
Over \$20 to \$30.....	15 cents.
Over \$30 to \$40.....	20 cents.
Over \$40 to \$50.....	25 cents.
Over \$50 to \$60.....	30 cents.
Over \$60 to \$70.....	35 cents.
Over \$70 to \$80.....	40 cents.
Over \$80 to \$90.....	45 cents.
Over \$90 to \$100.....	50 cents.

WHEN PAYABLE IN ANY OTHER FOREIGN COUNTRY.

For sums not exceeding \$10.....	10 cents.
Over \$10 to \$20.....	20 cents.
Over \$20 to \$30.....	30 cents.
Over \$30 to \$40.....	40 cents.
Over \$40 to \$50.....	50 cents.
Over \$50 to \$60.....	60 cents.
Over \$60 to \$70.....	70 cents.
Over \$70 to \$80.....	80 cents.
Over \$80 to \$90.....	90 cents.
Over \$90 to \$100.....	1 dollar.

FOREIGN MAIL MATTER AND RATES OF POSTAGE.

Articles for or from foreign countries (except Canada, Mexico, and Cuba) are classified as "letters," "post cards," "prints," "commercial or business papers," and "samples of merchandise."

This is known as the "Postal Union" classification of mail matter. There is no provision in the Postal Union mails for merchandise other than samples. A package of merchandise sealed and prepaid in full at the letter rate is, however, transmitted in the Postal Union mails to destination as a "letter." The right of its entry into the foreign country is determined by the administration of the country of destination.

Prohibited articles (see section 27), if mailed sealed against inspection, will not be delivered although they reach their destination.

Note.—Mail matter for Hawaii, Porto Rico, the Philippines, the islands of Guam and Tutuila, the "Canal Zone," and the United States postal agency at Shanghai, China, is subject to the domestic rates and conditions. (See section 1.)

Articles addressed for delivery at the following places in China, viz.: Cheefoo (Yentai), Chin Kiang, Chung King, Foochow, Hankow, Hung Chow, Ichang, Kaiping, Kalgan, Kiukiang, Nanking, Newchwang or Niuchwang, Ningpo, Ourga, Peking, Shanghai, Taku, Tientsin, Wenchow, Wuchang, Wuhu, Yentai (Cheefoo), are transmissible in the mails for the United States postal agency at Shanghai, but letters, postal cards, and prints for the places other than Shanghai are subject to the postage rates named in section 28.

SECTION 26.—CANADA, CUBA AND MEXICO.

Articles of every kind or nature which are admitted to the domestic mails of the United States will be admitted under the same conditions to the mails for Canada, Cuba, and Mexico, except that commercial papers and bona fide trade samples (including samples of liquids and fatty substances) are transmissible in the regular mails at the postage rate and subject to the conditions applicable to those articles in Postal Union mails, and also that packages—other than single volumes of printed books—the weight of which exceeds 4 pounds 6 ounces are excluded from mails for Cuba. Sealed packages, other than letters in their usual and ordinary form, are unmailable to Canada, Cuba and Mexico.

SECTION 27.—PROHIBITED ARTICLES

The transmission of the following articles is absolutely prohibited in the foreign mails under any circumstances, viz.: publications which violate the copyright laws of the country of destination; packets, except single volumes of printed books, which exceed 4 pounds 6 ounces in weight; poisons, explosive, or inflammable substances; live or dead (not dried) animals; insects (except bees) and reptiles; fruits and vegetables which quickly decompose and substances which exhale a bad odor; lottery tickets or circulars; all obscene or immoral articles, and all articles which may destroy or damage the mails or injure persons handling them.

SECTION 28.—RATES OF POSTAGE.

The rates of postage applicable to all foreign countries, other than those above mentioned, are as follows:

	Cents.
Letters, for each half ounce or fraction of half ounce.....	5
Single postal cards (including souvenir cards), each.....	2
Double postal cards (including souvenir cards), each.....	4
Printed matter of all kinds, for each 2 ounces or fraction of 2 ounces.....	1
Commercial papers for the first 10 ounces or less.....	5
And for each additional 2 ounces or fraction of 2 ounces.....	1
Samples of merchandise, for the first 4 ounces or less.....	2
And for each additional 2 ounces or fraction of 2 ounces.....	1
Registration fee in addition to postage.....	8

SECTION 29.—LETTERS.

Rate of postage, 5 cents for each half ounce or fraction of half ounce. Limit of weight, 4 pounds.

The postal conventions do not define the term "letter," but it is held that a package upon which postage at the letter rate has been prepaid in full was intended by the sender to be sent as a letter; and when it does not contain prohibited articles is required to be considered and treated as a "letter." Consequently packages addressed to foreign countries, except Canada, Cuba, and Mexico (see section 26), which are fully prepaid at the rate of postage applicable to letters for the countries to which the packages are addressed, are allowed to be forwarded by mail to their destinations, even though they contain articles of miscellaneous merchandise which are not sent as bona fide trade samples.

Note.—Articles other than letters, in their usual and ordinary form, on their arrival at the exchange post-office of the country of destination, will be inspected by customs officers of that country, who will levy the proper customs duties upon any articles found to be dutiable under the laws of that country and not prohibited transmission in the mails.

SECTION 30.—UNITED STATES POSTAL CARDS.

The United States international 2-cent single and 4-cent (reply) postal cards should be used for correspondence with foreign countries, except Cuba, Canada, and Mexico, to which the domestic single and double 1-cent cards are mailable; but when these cards can not be obtained, it is allowable to use the United States domestic 1-cent single or 2-cent (reply) postal cards with 1-cent United States adhesive postage stamps attached thereto.

By special arrangement with the Canadian Post-office Department, Canadian postal cards mailed in the United States bearing United States postage stamps (domestic rate), and United States postal cards mailed in Canada bearing Canadian postage stamps, are transmissible in the mails and deliverable without further charge.

Post Cards.—Private mailing cards are transmissible to foreign countries at the rate of 2 cents each, provided they conform to the conditions prescribed for similar cards in our domestic mails. To Canada, Mexico and Cuba they may be sent at a rate of 1 cent each.

Note.—"Reply" post cards (private mailing cards) are unauthorized, and therefore unmailable as such.

SECTION 31.—PRINTED MATTER.

Rate of postage, 1 cent for each 2 ounces or fraction. Limit of weight, 4 pounds 6 ounces.

Includes newspapers and periodical works, books stitched and bound, pamphlets, sheets of music, visiting cards, address cards, proofs of printing with or without the manuscripts relating thereto, papers with raised points for the use of the blind, engravings, photographs, and albums containing photographs, pictures, drawings, plans, maps, catalogues, prospectuses, announcements and notices of various kinds, whether printed, engraved, lithographed, or autographed and in general all impressions or reproductions obtained upon paper, parchment, or cardboard, by means of printing, engraving, lithographing, and autographing, or any other mechanical process easy to recognize, except the copying-press and the typewriter.

Facsimile copies of manuscript or typewriting obtained by a mechanical process (polygraphy, chromography, etc.) are assimilated to "prints"; but in order to pass at the reduced postage they must be mailed at the post-office windows, and in the minimum number of 20 perfectly identical copies.

SECTION 32.—COMMERCIAL PAPERS.

Rate of postage, for the first 10 ounces or less, 5 cents; and for each additional 2 ounces or fraction of 2 ounces, 1 cent. Limit of weight, 4 pounds 6 ounces.

Includes all instruments or documents written or drawn wholly or partly by hand, which have not the character of an actual and personal correspondence, such as papers of legal procedure, deeds of all kinds drawn up by public functionaries, waybills or bills of lading, invoices, the various documents of insurance companies, copies of or extracts from deeds under private signature, written or stamped or unstamped paper, scores or sheets of manuscript music, manuscript of books or of articles for publication in periodicals, forwarded separately, corrected tasks of pupils, excluding all comment on the work, etc.

ATLANTA, BIRMINGHAM & ATLANTIC RAILROAD CONSTRUCTION COMPANY.

Specifications for Yellow Pine Lumber to be Used on Wooden Bridges and Trestles.

All lumber to be cut from sound, live trees, sawed full size, square in section and out of wind. It must be close grained and free from wind shakes, large or unsound knots, pitch seams, decay or defects that will impair its strength or durability. Solid knots will be allowed, but not in groups, nor so located as to impair the strength of the piece.

Stringers shall show some heart all along all four sides.

Guard-rails shall show two-thirds heart all along top and bottom, or eight-inch sides, and some heart all along the other two sides.

Ties shall show two-thirds heart all along two opposite sides and one-half heart all along the other two sides.

Caps shall show two-thirds heart faces all along the twelve-inch sides and one-half heart all along the fourteen-inch sides—all twelve inches by twelve inches, lumber to show two-thirds heart all along the four sides.

All 3x10 lumber to show two-thirds heart all along on both faces.

All 6x10 lumber to show two-thirds heart all along on both faces and one-half heart all along the two edges.

All 8x12 lumber to show two-thirds heart all along the two faces and one-half heart all along the two edges.

All scantling shall show three corners heart.

Plank nine inches and under shall show one heart face and two-thirds heart on opposite side—over nine inches shall show two-thirds heart on both sides.

ALEX. BONNYMAN, Chief Engineer.

ATLANTIC COAST LINE RAILROAD COMPANY.

Specifications for Timber and Piles.

GENERAL TERMS.

Unless otherwise specified, all timber shall be made from sound, live trees, and cut full size, square-edged and out of wind; shall be close-grained, free from heart or wind shakes or any defects that will impair its strength or durability. It shall be long-leaf, yellow pine, black or red cypress.

TIMBER FOR BRIDGE AND TRESTLE TIES AND FOR GUARD-RAILS.

Shall be free also from all loose or unsound knots, or any knots over two (2) inches in diameter. Knots in groups will not be allowed. The two long sides shall show at least two-thirds heart and the other two sides some heart.

TIMBER FOR STRINGERS.

Shall be free also from all loose or unsound knots, or any knots over two (2) inches in diameter, and from pitch seams. Knots must not be in groups nor located so as to impair the strength of the piece (which means on the bottom or top side). Both of the long sides shall show at least two-thirds heart and the other two sides some heart.

TIMBER FOR CAPS, SILLS AND POSTS.

Shall be free also from loose or unsound knots. Knots up to two (2) inches in diameter will be allowed, but groups of knots will not be allowed. Two opposite sides shall show at least one-half heart and the other two sides some heart (where the section is oblong the two long sides must show the one-half heart); measurement to be taken across the surface at any point in the length of the stick.

TIMBER FOR BRACING, ETC.

Two-inch and three-inch plank shall be free also from large, loose or unsound knots; one long side shall show at least three-fourths and the other three sides some heart; to be measured across the surface at any point in the length of the side.

PILES—WHITE OAK.

Piles shall be cut from straight, sound, growing trees, free from wind or heart shakes, large, loose or unsound knots, decay or other defects that will impair the strength or durability of the pile. They shall be reasonably straight and uniformly tapering. The wood shall be close, firm grained and with sap ring not over two (2) inches thick. They shall not be less than twelve (12) inches in diameter, six (6) feet from the butt, and when less than thirty (30) feet long shall not be less than ten (10) inches in diameter at point; thirty (30) to thirty-nine (39) feet in length, nine (9) inches at point; forty (40) feet and over in length, eight (8) inches at point.

PILES—LONG-LEAF YELLOW PINE, BLACK OR RED CYPRESS.

They shall be cut from sound, live trees, close grained, free from wind or heart shakes, large, loose or unsound knots, decay or other defects that will impair the strength or durability of the pile. They shall be hewn square for twenty-five (25) feet from the butt or large end, except that one (1) inch wane will be allowed on two corners for one-half the length of the hewn part. The balance of the pile may be left round. The hewing must be reasonably smooth, and deep score hacks will not be allowed. The piles shall not be less than twelve (12) inches square nor more than fourteen (14) inches square at the butt, and not less than ten (10) inches in diameter at the point for piles thirty-five (35) feet long and under, and not less than eight (8) inches in diameter at point for lengths over thirty-five (35) feet. The hewn part must show not less than four (4) inches heart on all four sides measured across the surface at any point. Piles having a bend not exceeding four (4) inches in twenty (20) feet, six (6) inches in thirty (30) feet and eight (8) inches in forty (40) feet or over will be considered straight. No short crooks will be allowed.

Where unhewn piles are to be provided they must fill all the requirements of the above, except as to **hewing**, and in place of that it is herein specified that they shall not exceed sixteen (16) inches in diameter at the butt, and shall be at least twelve (12) inches in diameter at a point twenty-five (25) feet from same, and show at least twelve (12) inches diameter at the large end.

PILES FOR FOUNDATIONS.

Subject to permanent moisture, false work or other temporary work, may be hickory, elm, gum, pine, cypress or any other sound timber that will stand driving. They must be as straight as specified for cypress and yellow pine piles above; they shall not be less than twelve (12) inches nor more than sixteen (16) inches in diameter at the butt, nor less than nine (9) inches in diameter at the point.

TIMBER FOR BUILDINGS, PLATFORMS, ETC.

Dimension sizes shall embrace all sizes six inches and up in thickness by six inches and up in width.

Plank shall embrace all sizes from one and one-half to six inches in thickness by six inches and over in width.

Scantling shall embrace all sizes exceeding one and one-half inches, and under six inches in thickness, and from two inches to six inches in width.

Boards shall embrace all thicknesses under one and one-half inches by over six inches wide.

Stepping shall embrace one to two and a half inches in thickness by six inches and up in width.

Boards shall be sound, square, well manufactured, full size, free from unsound, loose and hollow knots, worm holes and knot holes, through shakes or round shakes; unless otherwise specified, sap and short-leaf pine no objection.

Flooring shall be free from through or round shakes, or knots exceeding one inch in diameter, or more than four in a board on face side in a twelve-foot length.

Stepping shall show one long face side heart, free from shakes and all knots exceeding one inch in diameter, and not more than six in a board of sixteen feet length.

Scantling shall be free from through or round shakes or unsound knots; unless otherwise specified, sap and short-leaf pine no objection.

Plank.—All plank shall be free from large, loose or unsound knots, and when orders are marked "heart," must show one long face of heart entire length of board, but where heart is not specified, sap and short-leaf pine no objection.

Dimension.—All dimensions shall be free from all defects that will injure its strength and durability, and show two-thirds heart at top end on all four sides, except where orders read square and sound, then sap and short-leaf pine will be no objection.

Approved,

E. B. PLEASANTS, Chief Engineer.

Wilmington, N. C., March 24, 1906.

CENTRAL OF GEORGIA RAILWAY COMPANY.

SPECIFICATIONS AND CLASSIFICATION.

Bridge, Trestle and Other Roadway Lumber.

All lumber to be long-leaf yellow pine, red or black cypress, as specified, cut true and out of wind, to exact dimensions, and sawed square at both ends, shall be free from wind shakes, cracks, worm holes, decayed wood, large knots, loose or unsound knots, red heart, or any other defect that would impair life and strength of the piece.

All lumber to be sawed unless otherwise specified.

ROUGH LUMBER.

Flooring will embrace one inch and one and a quarter inches in thickness by three to six inches in width, and shall have one entire heart face and two-thirds of the width of the opposite face heart; free from splits, shakes or knots.

Boards will embrace all the thickness one and a half inches and under by seven inches and over in width; shall show no wane and be free from round or through shakes, large knots, loose or unsound knots; bright sap no objection.

Scantling will embrace all sizes from two inches to five inches in thickness by two inches to six inches in width; shall show no wane and be free from injurious shakes, unsound or loose knots, or large knots that would impair the strength of the piece; bright sap no objection.

Plank will embrace all sizes from one and a half inches to six inches in thickness by seven inches and over in width, and shall have one heart face and two-thirds of the width of the opposite face heart; to be free from round or through shakes, large, loose or unsound knots, blue sap or damaging worm holes.

Dimension sizes (sawn or hewn) will embrace all sizes six inches and over in thickness by six inches and over in width; shall have not more than one and a half inches of sap measured diagonally across the corners; to be free from large, loose or unsound knots, through or round shakes.

DRESSED LUMBER.

All the foregoing sizes shall be dressed when specified to the sizes given, and will be inspected under the same specifications as for rough lumber.

Dressed Finishing, Flooring, Ceiling, Drop Siding, Bevel Siding.—Shall be specified as clear or heart face clear. Clear shall be free from all defects except that bright sap is admissible. Heart face clear shall have one heart face and be free from all defects on face side.

Shingles shall be No. 1 cypress all heart, four inches or five inches wide by sixteen inches or eighteen inches long, and to be 1-16 inch thick at small end and two-fifths of an inch or over thick at butt end.

Laths shall be three-eighths of an inch thick by one and a half inches wide by four feet long, free from loose knots.

PILES.

All piles to be made from straight, sound, live timber, free from cracks, shakes and large, loose or unsound knots, cut from long-leaf yellow pine, red or black cypress, as specified. They must be so straight that a straight line taken in any direction from the center of each end of the pile and run the length of it shall show that the pile is at no point over one-eighth of its diameter at such a point out of a straight line.

Sawed or Hewed Piles.—Piles will bear the same inspection as "Dimension Lumber," shall have not more than one and a half inches of sap measured diagonally across the corners. Ends must be cut square. Piles 30' 0" long and under must be not less than 12"x12" square; 30' 0" to 50' 0" long and over must be not less than 14"x14" at butt end, and may show an even gradual taper of two inches in each 25' 0" from end to end.

Round Piles.—Piles must have not less than 12" diameter heart at butt or large end, measured across the narrowest diameter, and for lengths 30' 0" and under, shall show 10" diameter heart at small end, and at no point more than 20" diameter. Thirty to fifty feet long must have not less than 14" diameter heart at the butt, or large end, and a decrease in diameter of heart of 2" in each 25', and at no part more than 20" in diameter.

Savannah, Ga., May 26, 1905.

Approved:

T. S. MOISE,
General Manager.

HENRY M. STEELE,
Chief Engineer.

THE CINCINNATI, HAMILTON & DAYTON RAILWAY COMPANY.

All lumber purchased for this system to be as follows:

Car sills 70 per cent. heart yellow pine; bridge timbers of 90 per cent. heart yellow pine; car siding and roofing of No. 1 common short-leaf yellow pine and car lining of No. 1 common either long-leaf or short-leaf yellow pine.

Yours truly,

A. L. SANGER, Purchasing Agent.

Cincinnati, Ohio, March 30, 1906.

CHICAGO, ROCK ISLAND & PACIFIC RAILROAD.

Also Used by Grand Trunk Railway System, Approved September 23, 1898.

SPECIFICATIONS FOR LONG-LEAF YELLOW PINE TIMBER.

1. General specifications for all classes of timber: All timber shall be sawed from sound, live, long-leaf yellow pine, and shall be cut square and out of wind, with adjacent faces at right angles to each other. No piece shall vary more than one-eighth inch plus four per cent. from the specified dimensions. All timbers shall be free from wane, splits, shakes, black, rotten, soft or loose knots, and from any defects which would injure its strength.

2. With regard to proportions of sap and heartwood, timber shall be divided into four grades as follows:

Grade 1. Ninety-five per cent. heartwood, including stringers, large joists, caps and timber designed for transverse loading. One of the narrower faces to be used for the under face shall also be all heartwood. The two faces adjacent to this shall be not less than 90 per cent. heartwood. The top face shall show an average of 33 per cent. heartwood.

Grade 2. Ninety per cent. heartwood, including ties, guardrails, caps, etc., or timber for bearing and transverse loading combined. The bearing face to be all heartwood. The two faces adjacent to this to be not less than 65 per cent. heartwood. The remaining face to show an average of 40 per cent. heartwood.

Grade 3. Eighty-five per cent. heartwood, including posts, sills, girts, etc., or timber for bearing compression loading. One corner to be all heartwood. Faces adjacent to this to be not less than 70 per cent. heartwood. Other two faces to be at least 40 per cent. heartwood.

Grade 4. Eighty per cent. heartwood, including plank, studding, etc., for platform stuff, braces and rough or temporary work; 90 per cent of one face to be heart; 60 per cent. of opposite face to be heart. The two faces above named to be wider faces of the piece.

SPECIFICATIONS FOR YELLOW PINE COAL CAR SIDES AND ENDS.

Must be well manufactured from sound, long-leaf, live timber. Sound knots not exceeding one and a half inches in diameter will be allowed, provided their location is such as not to impair the strength or durability of the piece for the purpose intended.

Must be free from shakes or splits. Inspectors must be careful to reject any piece in which a number of knots are located near each other which would weaken the piece.

SPECIFICATIONS FOR YELLOW PINE CAR FLOORING.

Must be well manufactured from sound, long-leaf, live timber, cut full size and free from splits, shakes, coarse or black knots and discolored sap. No wane will be allowed, except such as will dress out in the process of manufacture. It must be free from sap on one face. The sap face of the poorest piece should have not more than four inches of sap at any point of its length.

Rough flooring must be two inches and two and a half inches thick by six inches, eight inches, ten inches, or twelve inches wide; about 5 per cent. of the total of the twelve-inch width and remainder in about equal proportion of the other widths. It must finish one and three-quarters inches and two inches thick respectively, with five and a quarter inches, seven and a quarter inches, nine and a quarter inches and eleven and a quarter-inch face.

**CINCINNATI, NEW ORLEANS & TEXAS PACIFIC
RAILWAY COMPANY.**

SPECIFICATIONS FOR YELLOW PINE LUMBER.

"Above to be heart close-grained, long-leaf yellow pine, sawed true and out of wind. Must be full size and free from wind shakes, large, loose or black knots, decayed brash or sap wood, worm holes, or other defects impairing its strength or durability."

THE DELAWARE & HUDSON COMPANY.

(For lumber use prime quality, by rules Southern Lumber and Timber Association, 1883.)

SPECIFICATIONS FOR YELLOW PINE CROSSTIES.

To be cut in Florida, Southern Georgia or along the Gulf—ties from the Carolinas and other sections will not be accepted—manufactured from green, living, long-leaf virgin pine, untapped, perfectly sound and free from rotten spots, worm holes, heart shakes, large, loose or unsound knots and unsound hearts; hewn nine inches wide on two parallel faces, not less than seven, nor more than eight inches thick, and eight and a half feet long, smoothly hewn on all four sides, with both ends square butted with the saw. Ties to be practically clear of sap; there will, however, be an allowance of one-inch sap on the corners, the sap, if any, to be on the corners of the same face, leaving one nine-inch face entirely clear; in no case will ties having more sap be classed as No. 1 or market ties. Ties splitting logs through center of heart will be rejected.

INTERBOROUGH RAPID TRANSIT COMPANY.

SPECIFICATIONS FOR TRACK TIMBER.

1. The timber to be of long-leaved, first growth, Florida, Georgia or Alabama yellow pine, straight, square edged, free from shakes, loose, large or rotten knots, and every other material imperfection, planed on all sides, and of the full schedule dimensions after planing.

2. In no case will any stick be accepted with less than three corners, or with more than one inch of sap on the fourth corner, or more than two and a half inches of sap on either side at either end of the stick.

3. The timber to be delivered as required by this company, under the foregoing requirements, irrespective of trade usage or conventional specifications, and to be subject to the inspection and acceptance or rejection of the company's authorized inspector.

GEO. H. PEGRAM, Chief Engineer.

October 15, 1904.

ILLINOIS CENTRAL RAILROAD.

SPECIFICATIONS FOR LONG LEAF YELLOW PINE TIMBER,

Also Used by Yazoo & Mississippi Valley Railroad, Approved May 12, 1902.

1. General specifications for all classes of timber: All timber shall be sawed from sound, live, long-leaf yellow pine, and shall be cut square and out of wind, with adjacent faces at right angles to each other. No piece shall vary more than one-eighth-inch plus four per cent. from the specified dimensions. All timber shall be free from wane, splits, shakes, black, rotten, soft or loose knots, and from any defects, which would injure its strength.

2. With regard to proportions of sap and heartwood, timber shall be divided into four grades as follows:

Grade 1. Ninety-five per cent. heartwood, including stringers, large joists, caps, and timber designed for transverse loading. One of the narrower faces to be used for the under face shall also be all heartwood. The two faces adjacent to this shall be not less than 90 per cent. heartwood. The top face shall show an average of 33 per cent. heartwood.

Grade 2. Ninety per cent. heartwood, including ties, guardrails, caps, etc., or timber for bearing and transverse loading combined. The bearing face to be all heartwood. The two faces adjacent to this to be not less than 65 per cent. heartwood. The remaining face to show an average of 40 per cent. heartwood.

Grade 3. Eighty-five per cent. heartwood, including posts, sills, girts, etc., or timber for bearing compression loading. One corner to be all heartwood. Faces adjacent to this to be not less than 70 per cent. heartwood. Other two faces to be at least 40 per cent. heartwood.

Grade 4. Eighty per cent. heartwood, including plank, studding, etc., for platform stuff, braces and roughs, or temporary work; 90 per cent. of one face to be heart; 60 per cent. of opposite face to be heart. The two faces above named to be wider faces of the piece.

SPECIFICATIONS FOR CYPRESS BRIDGE TIMBER.

All cypress bridge timber shall be of the red cypress variety, or what is usually called "Louisiana cypress." It shall be divided into several grades corresponding to the above division for yellow pine timber, in accordance with the use to which it is to be put, and shall be generally classed as merchantable heart timber, free from extensive honey-comb peck. Timber shall not be rejected on account of small wind shakes running in one direction only, provided the timber can be used so that such shakes are vertical or at right angles to the bearing faces of the timber. Timber containing extensive honey-comb peck, black, rotten knots and holes shall be rejected. Sap wood may be permitted in the several cases as specified above for yellow pine timber.

THE LAKE SHORE AND MICHIGAN SOUTHERN R'Y.

SPECIFICATIONS.

LONG-LEAF YELLOW PINE BRIDGE TIES AND RIBBON.

Must be strictly all heart, except that not to exceed one inch of sap will be allowed on two corners if piece is otherwise first-class.

Must be tight-hearted, sawed full size, with square edges, to the dimensions given. Must be free from rot or decay, loose, rotten or unsound knots, through shakes or splits. Must be sawed from live, thrifty, green timber, and be well manufactured.

LONG-LEAF YELLOW PINE CAR SILLS.

Sills ten inches and up wide require two-thirds heart on both faces the entire length of the sill; under ten inches wide requires one heart face and two-thirds heart on opposite side the entire length. Must be free from round or through shakes, large, loose or unsound knots, rot or decay. Must be sawed full size with square edges.

LONG-LEAF HEART-FACED YELLOW PINE CAR DECKING.

Must be free from sap on one face, knots must be sound and not too coarse; a ten-inch piece to admit of larger knots than six-inch piece. The location of the knots must be such as to not impair the strength or usefulness of the piece, nor occur on the edge where the plank are tongued and grooved, except they be absolutely sound and firmly imbedded in the piece. Decking must be free from rot or decay, loose, rotten, unsound, or extremely coarse knots, round or through shakes.

LEHIGH VALLEY RAILROAD.**SPECIFICATIONS FOR YELLOW PINE CROSSTIES.**

All ties must be of good Georgia, Florida or Alabama sound, long-leaf yellow pine timber, free from loose knots and other imperfections.

CLASS "A" CROSSTIES FOR MAIN TRACKS.

Class "A" No. 1 Ties must be eight and a half feet in length, seven inches thick on both edges for their entire length, and not less than nine inches on face or width. They must be well hewed on four sides, straight and out of wind. Ends cut square, of even thickness throughout and entirely free from sap, except on the corners, where not more than one inch of sap will be allowed. No sawed ties will be accepted as No. 1.

No variations will be allowed in length or thickness.

Class "A" No. 2 Ties must have a face or width of not less than eight inches, and in other respects conform to the specification for No. 1 ties. Not more than 10 per cent. of Class "A" No. 2 ties will be accepted on any order for No. 1 ties.

CLASS "B" CROSSTIES FOR BRANCHES, SIDINGS AND YARDS.

Class "B" No. 1 Ties must be exactly eight feet in length, six inches thick on both edges for their entire length, and not less than nine inches on face or width. Quality and manufacture same as for Class "A" No. 1 ties. No sawed ties will be accepted as No. 1.

No variations will be allowed in length or thickness.

Class "B" No. 2 Ties must have a face or width of not less than eight inches, and in other respects conform to specifications for No. 1 Ties. Not more than 10 per cent. of Class "B" No. 2 ties will be accepted on an order for No. 1 ties.

SPECIFICATIONS FOR YELLOW PINE SWITCH TIES.

All switch ties must be of good Georgia, Florida or Alabama sound, long-leaf or yellow pine timber, straight and free from decayed knots, loose knots or other imperfections.

All switch ties must be sawed full seven inches by ten inches, and no variation in size will be allowed. They must be sawed to length as specified in order, and both ends must be cut square. In quality they must conform to the "Merchantable inspection" of the Southern Lumber and Timber Association, Savannah Rules adopted February 14, 1883.

South Bethlehem, Pa., January 1, 1902.

LONG ISLAND RAILROAD COMPANY.**SPECIFICATIONS FOR CROSSTIES.**

1. Ties may be made from timber of the following varieties: White oak, burr or rock oak, post oak, chestnut oak, white chestnut, white cedar and long-leaf yellow pine grown south of North Carolina.

2. The timber must be felled during the months of November, December, January and February only.

3. Ties must be made of sound, thrifty timber, free from all defects and imperfections which affect their strength or durability. Must be hewed with faces true and parallel, and of the thickness specified; the thickness at opposite ends in no case to vary more than one-half inch, the faces to be out of wind, as smooth and free as practicable

from any inequality of surface, such as deep or bad score marks or splinters, and to be sawed to length specified. They must not be more than one inch out of straight in any direction. No slab ties will be accepted.

4. Yellow pine ties must be hewed on four sides, and have not more than one inch of sap showing on any face at edge of ties.

5. All ties of other timber than yellow pine must be hewed on two sides only.

6. Sawed ties will not be received unless so ordered, and they then must have the dimensions given in paragraphs 7 and 8.

7. The standard first-class yellow pine tie should be eight feet long, six inches thick and nine inches wide. It must not be less than eight feet nor more than eight feet one inch long, nor less than six inches nor more than seven inches thick, and not less than the width specified.

8. Second-class yellow pine ties include all ties filling the requirements for quality set forth in paragraph 3, but not of the dimensions required for first-class ties, provided they are not less than eight feet nor more than eight feet one inch long, nor less than six inches thick and eight inches wide. The inspector may, at his discretion, accept as second-class any tie showing imperfections which lie outside of the minimum measurement of a second-class tie.

9. The standard first-class pole tie should be eight feet long, six inches thick and seven inches wide between bark at narrow end. It must not be less than eight feet nor more than eight feet one inch long, nor less than six inches thick, nor less than seven inches wide between bark at narrow end, nor more than twelve inches wide at wide end.

10. Second-class pole ties to include all ties filling the requirements for quality set forth in paragraph 3, but not of the dimensions required for first-class ties, providing they are not less than eight feet nor more than eight feet one inch long, nor less than six inches wide between bark and narrow end. The inspector may, at his discretion, accept as second-class any tie of the dimensions of a first-class tie, showing imperfections which lie outside of the minimum measurements of a second-class tie.

11. Ties not passing inspection for either firsts or seconds will, unless worthless, be accepted as culls.

12. Pole ties made of timber other than white cedar, must have the bark removed.

13. The company reserves the right to refuse to receive more than 15 per cent. of second-class ties from any cargo.

14. All ties coming by vessel are to be either unloaded and piled on pier or bulkhead, or to be delivered in the sling on cars, as this company may elect.

15. All ties delivered along the line of the railroad must be stacked up neatly, with ends to the track and at least seven feet away from the nearest rail and on ground, wherever possible, as high or higher than the grade of the railroad. A written memorandum must be left with agent at the nearest station stating number of ties and exact location, and the same information should be mailed to the purchasing agent, Long Island City. All ties will be at owner's risk until inspected and accepted by this company, which will be done as soon after notice is received as the company finds it convenient to take them up.

16. All ties to be subject to inspection and count of the purchasing agent, or his authorized agent, whose decision in counting and receiving or rejecting shall be final and conclusive.

Long Island City, N. Y., January 1, 1903.

GULF & SHIP ISLAND RAILROAD COMPANY.

All timber for this railroad company is purchased as follows:

Timber for trestles to be 90 per cent. heart, allowing one and a half inches of sap on two corners.

Lumber for car sills, car decking, bracings, etc., to be square edge and sound.

Material for depots, car roofing and car siding to be No. 1 Common.

W. T. STEWART, Purchasing Agent.

Gulfport, Miss., March 29, 1906.

THE MINNEAPOLIS & ST. LOUIS RAILROAD COMPANY.

SPECIFICATIONS FOR PILING.

GENERAL.

All piles must be cut from sound, growing timber, free from heart or wind shakes, splits, decay or pecky wood, or any other defect impairing their strength or durability. They shall have all the bark peeled off, and knots smoothly trimmed, be straight and free from twists in the fibre, and shall be sawed off square at both ends; and no pile shall contain any of the ground swell of the tree.

OAK.

Oak piles shall be of the variety known as white or post oak, and shall be of close, firm grain. No pile will be accepted which has a sap ring over two inches in thickness.

They shall not be less than ten inches in diameter at the small end, nor less than eleven inches ($34\frac{1}{2}$ inches in circumference) nor greater than thirteen inches in diameter at a point fourteen feet from the small end, nor be less than twelve inches in diameter at the butt or larger end of the pile.

CEDAR.

Cedar piles shall not be less than twelve inches in diameter ($37\frac{1}{2}$ inches in circumference) at a point fourteen feet from the small end, nor less than fourteen inches at the butt or larger end of the pile.

In the case of white cedar piling paper heart rot will be accepted, provided the defect does not exceed one-fourth of the diameter of pile. Dry rot and pipe rot will not be accepted.

CYPRESS.

Cypress piles shall be of the varieties known as red or yellow cypress, of a close, firm grain; no pile will be received which has been cut from a tree having an excessive amount of sap wood, it being considered one of the indications of a true red or yellow cypress that the sap ring around the tree shall be thin.

All cypress piles of any length shall be hewed square with all of the sap removed. They must be well and smoothly hewed and no pile will be accepted which has large or deep score hacks. They shall not be less than ten inches square at the small end, and shall not be less than twelve inches nor greater than fourteen inches at the butt or larger end of the pile.

TREATED.

Treated piles shall be either from Southern yellow pine or Northern Norway pine.

They shall be not less than nine inches in diameter ($28\frac{1}{4}$ inches in circumference) at the point or small end of the pile.

The process of treatment shall be by injection of creosote oil (dead oil of coal tar) and the piling after treatment shall contain not less than twelve pounds of creosote oil per cubic foot of timber treated.

(1) The tar oil must be clear; that is, there must be no substances in suspension. This is best tested by putting a drop of the oil on a piece of filter paper. The resulting spot must be clear and translucent.

(2) The specific gravity must be about 1.04 to 1.05 at a temperature of 20° C., 68 F.

(3) Boiling points. Up to 150° C. nothing must come off. Up to 200° C. not more than 10 per cent. may come off. Up to 235° C. not more than 25 per cent. may come off. Up to 355° C. at least 90 per cent. must come off.

(4) The oil must be absolutely soluble in benzine or absolute alcohol.

INSPECTION.

Will be made by an authorized inspector of the railroad company. All piles will be inspected upon the ground, or before loading on cars.

Ample notice must be sent to the purchasing agent advising when piles will be ready for inspection and at what points they will be loaded.

December, 1904.

SPECIFICATIONS FOR SWITCH TIES.

All ties must be manufactured from sound, straight, growing timber, free from wind shakes, splits or decay and of full and true dimensions as hereinafter specified. They shall have parallel faces out of wind, with both ends squared, and be free from wane, score hacks, or large or unsound knots, impairing their strength or durability.

If sawed, the ties must be of exact dimensions with square edges.

If hewed, the ties must be smooth on top and bottom faces and be uniformly seven (7) inches thick.

Headblocks must always be sawed and be of full and true dimensions with square edges.

INSPECTION

Will be made by an authorized inspector of the railroad company. All ties will be inspected upon the ground, or before loading into cars.

Ample notice must be sent to the purchasing agent advising when ties will be ready for inspection and at what points they will be loaded.

Sets must be shipped complete as ordered.

Length must be marked plainly on face or end of each tie.

Sets must be kept separate in loading cars.

November 10, 1903.

SPECIFICATIONS FOR TRACK TIES.

GENERAL.

All ties must be cut from sound, straight, growing timber, free from wind shakes, splits or decay, and of full and true dimensions as hereinafter specified. No ties will be accepted which are less than seven feet eleven inches (7 ft. 11 in.) in length or more than eight feet one inch (8 ft. 1 in.). They shall have parallel faces out of wind, be sawed off square at both ends, and be free from wane, score hacks or large or unsound knots, impairing their strength or durability. Oak ties must have all the bark peeled off.

OAK TIES

Must be either of white, post or burr oak timber. They must be hewed and not sawed, and may be of the kind known as "pole ties" or "split ties."

Pole Ties.—Must be smoothly hewed on top and bottom faces, and must be uniformly six (6) inches thick between faces; each face side to be not less than seven (7) inches nor more than ten (10) inches wide, and to be eight (8) feet long.

Split Ties.—Must be six (6) inches thick, eight (8) inches wide and eight (8) feet long, smoothly hewed on all four sides.

CEDAR TIES

May be either hewed or sawed and be of two distinct sizes, to be designated as "seven-inch pole ties" and "six-inch ties."

Seven-Inch Pole Ties.—Must be hewed or sawed on top and bottom faces and must be uniformly seven (7) inches thick between these faces; each face must be not less than seven (7) inches nor more than twelve (12) inches wide and eight (8) feet long.

Six-Inch Ties.—Must be either sawed or hewed on top and bottom faces, and may be sawed on all four sides. If pole ties, they shall not be less than six (6) inches thick between faces; and each face to be not less than six (6) inches nor more than twelve (12) inches wide and eight (8) feet long. If sawed on all four sides they must be six (6) inches thick, eight (8) inches wide and eight (8) feet long.

SOFT WOOD TIES

Will include ties cut from tamarack and hemlock timber. They must all be pole ties hewed smooth on top and bottom faces, and be uniformly six (6) inches thick between their faces; each face to be not less than six (6) inches nor more than ten (10) inches wide and eight (8) feet long.

SECOND-CLASS TIES

Will be understood to include ties of the above specified kinds which fail to fulfill the specifications in exact dimensions and may be accepted by the railroad company at its option at prices provided for second-class ties in the contract or order.

INSPECTION

Will be made by an authorized inspector of the railroad company. All ties will be inspected upon the ground, or before loading into cars.

Ample notice must be sent to the purchasing agent advising when ties will be ready for inspection and at what points they will be loaded.

H. G. KELLEY,
Chief Engineer.

October 17, 1903.

FRED WING,
Purchasing Agent.

LOUISVILLE & NASHVILLE RAILROAD COMPANY.

RULES FOR INSPECTION OF LUMBER FOR MECHANICAL DEPARTMENT.

Office of Superintendent of Machinery,
Louisville, Ky., Nov. 14, 1903.

All lumber must be manufactured from sound, growing timber, true to dimensions, straight grained, and free from bark edge, splits, shakes, rot, worm holes, loose or rotten knots, or sound knots above dimensions given, or so located as to materially impair the strength or durability of the piece.

In framing material where the cross-section is four by eight inches and upward, sound knots one and a half inches in diameter will be allowed, if not less than three feet apart and not less than one-quarter the width of the piece from the edge. Pieces which contain the heart center must be cut so the center of heart will not be less than two inches from either side or edge. Pieces which do not contain the center heart, as above, shall not be sawed less than one inch on side or edge, or two inches on corner from center. Bright sap will be allowed to the extent of half an inch measured at its least depth, provided that when on the side of a piece the poorest edge shall show three-quarters of thickness sound heart; when sap is on one corner of a piece it must show two-thirds the depth and half the thickness of good heart timber; when on two corners it must show sound heart three-quarters of width and depth respectively on poorest edge and sap side; when it shows on four corners the edges must show three-quarters, and the sides seven-eighths of heart timber.

In smaller dimensions the knots and all other defects must decrease in proportion.

All main sills, side plates, side boards, running boards, ridge poles, purlines and pine flooring must be of long-leaf yellow pine, cut in the States of Georgia, Florida, Mississippi or Alabama.

Side boards, flooring, running boards, ridge poles, purlines, etc., must have one entire heart face, and not less than three-quarters of the width on opposite sides, with half the thickness on both edges heart.

Siding and lining for freight cars should be ordered in 1x4 inch strips, or proper widths to make them, and such strips should have one clear heart face; bright sap on opposite side and two sound knots three-quarters of an inch in diameter to each strip of eight feet in length will be accepted. When ordered in wide boards the inspection will be in accordance with this. This timber must be free from pitch streaks and pockets.

For Winslow roofing in strips of six inches wide, bright sap to the extent of one-third the width and two sound knots three-quarters of an inch in diameter in a piece five feet long will be admissible, if not near the edge.

For double board roofing one face must be clear heart and free from knots, opposite side and edges not less than one-half heart.

Stock boards ten inches and over will be accepted with perfectly sound knots of two inches in diameter, if fairly intergrown to prevent falling out, to the extent of three in a length of twelve feet, if not located near the edge. Sap should not exceed one-third width of board on either side.

Common boards can be all bright sap if clear from knots, or one-half sap with sound knots, as in stock boards.

Blue sap will not be accepted in anything, but in common boards a slight stain will be admissible.

As these rules are descriptive of the poorest quality that will be accepted, it is expected that at least 75 per cent. of each shipment will be of a superior quality, and in making reports of inspection to purchasing agent on form 261, the number of pieces coming under different classifications will be reported, or in case of boards, the percentage of the carload.

In making requisitions, and reporting on form 261, the different grades needed and received will be indicated by numbers as follows:

No. 1. To be clear heart throughout and contain no center heart. This grade to be used for pattern making, fine cabinet work, pilots, passenger car siding, platform and truck timbers for passenger equipment only.

No. 2. To have three corners free from sap and contain no center heart. To be used for brake beams, draft timbers, body bolsters, passenger car framing, etc.

No. 3. To be in accordance with general description and cuts for framing material. For general use.

No. 4. To be as per general description for side boards, flooring, etc.

No. 5. To be as per general description for siding and lining.

No. 6. To be as per general description for Winslow roofs.

No. 7. To be as per general description for double board roofs.

No. 8. To be as per general description for stock boards.

No. 9. To be as per general description for common boards.

As these rules apply to all kinds of wood, requisitions and orders should be made out giving quality, kind of wood, dimensions, for what use, and then designate the grade or quality by number, care being taken not to designate a superior quality to what is really needed, as it is but reasonable to expect that prices will be governed by the grading.

THEO. H. CURTIS,

Superintendent Machinery, Office of Chief Engineer.

Louisville, Ky., Feb. 1, 1902.

SPECIFICATIONS FOR YELLOW PINE LUMBER TO BE USED BY THE ROAD DEPARTMENT OF THE L. & N.

All lumber must be of good, sound, long-leaved yellow pine, cut from live timber, free from large, unsound, loose and hollow knots, injurious shakes, through splits, decayed parts, or other defects which might impair its strength or durability.

Deadened lumber, or lumber which has been bled for turpentine, will not be received.

All lumber must be evenly sawn, true to size, square-edged and square-buttied with saw.

Any lumber not coming up to sizes and lengths specified will be rejected.

Unless otherwise specified, lumber shall betwelve feet or more in length.

Lumber of a size 12x12 inches, or less must be all heart. On lumber over 12x12 inches sap will be allowed at corners not to exceed one inch.

It is understood that all lumber not coming up to the requirements above will be condemned.

The lumber will be inspected at the mill.

SPECIFICATIONS FOR CROSSTIES.

1. The ties to be of sound, thrifty white oak, post oak, or long-leaf yellow pine, hewn smooth and straight on two sides to parallel faces, and to have the bark taken off the other two sides, timber to be perfectly sound and without twists. Ties made from deadened or worm-eaten timber will not be received at any price.

2. The ties to be eight and a half feet long, not less than nine inches wide on face, and seven inches thick. Length and thickness must be exact, within one-fourth of an inch, ends of ties to be sawed off square.

No sawed ties will be accepted, except by special agreement.

NASHVILLE, CHATTANOOGA & ST. LOUIS RY. SPECIFICATIONS.

All timber will be strictly close-grained, slow growth, long-leaved, live yellow pine, free from wane edges, shakes, heart-ring, doat, large, loose or otherwise injurious knots or defects, sawn true to dimensions and out of wind. Timber showing excessively ragged ends from cut-off saw will not be received. Sap allowance as follows: Timber having no dimension as large as twelve inches must be free from sap. Timber having one dimension as large as twelve inches may have one inch sap on two corners, measuring with the face. Timber having one dimension larger than fourteen inches must show two-thirds heart at all points on every face, measuring with the face.

THE KANSAS CITY SOUTHERN RAILROAD CO.

Practically all lumber for our system is purchased according to the grades of the Southern Lumber Manufacturers' Association.

We furnish to sellers blue-print showing the sap allowance on the several sizes of long-leaf yellow pine timbers used in bridge construction.

L. F. JORDON, Purchasing Agent.

Kansas City, Mo., March 30, 1906.

NEW YORK CENTRAL & HUDSON RIVER RAILROAD.

LEASED AND OPERATED LINES—ENGINEERING DEPARTMENT.

Specifications for Lumber.

GENERAL.

All lumber must be sawed square-edge, and shall be of the dimensions specified, after seasoning.

All lumber which fails to pass the railroad company's inspection shall be removed from the company's premises at once, and at the shipper's expense.

No lumber which is ordered as one grade and which fails to pass the inspection of that grade will be accepted at a lower grade, except by special permission of the chief engineer.

Should one-third ($\frac{1}{3}$) of any order fail to pass inspection, the railroad company reserves the right to reject the entire order.

All lumber must be delivered F. O. B. cars on New York Central leased or operated lines.

All lumber must be cut within eighteen (18) months of the time of delivery, from living trees, of good quality, and unless otherwise specified must be free from decay, splits, shakes, twists, loose knots, worm holes, bark and other imperfections, which will impair its strength, durability or fitness for the purpose intended.

When sap is mentioned it is intended to refer to measurements along the side or face of the piece, unless otherwise specified.

When dressed lumber is required, the dimensions given shall refer to rough sizes, except flooring, ceiling, or where otherwise specified. Allowance will be made of one-eighth-inch for each planer cut. No rough lumber shall be admissible that is more than one-quarter-inch scant on eight-inch or under; three-eighth-inch scant on ten-inch, or half-inch scant on twelve inches or wider.

No rough yellow pine one inch, one and a quarter-inch, one and a half-inch shall measure, when dry, more than 1-16 inch scant in thickness, and on two inches it may be one-eighth-inch scant.

Where defects are specified in defining grades, they refer to the worst piece which will be accepted. The average should be midway between the piece described and the worst piece of the higher grades.

PILES.

Piles shall be of Norway pine, white or burr oak, or yellow pine as required. The diameter measured two (2) feet from the butt or larger end shall be not less than fourteen inches nor more than sixteen (16) inches, and the diameter of the small end of piles under forty (40) feet in length shall be not less than eight (8) inches; over forty (40) feet in length, not more than six (6) inches. No splay butts. All branches shall be cut close to the trunk. Piles need not be peeled unless so specified in the order. They shall show a gradual taper from one end to the other, and piles twenty (20) feet in length and less shall be so straight that a straight line drawn between the centers of the ends shall at no point come nearer the circumference of the pile than one-quarter ($\frac{1}{4}$) of the diameter of the pile at that point. Piles over twenty (20) feet in length shall be so straight that a straight line drawn between the centers of the ends shall at all points come within the circumference of the pile. The ends shall be cut square. The piles shall be cut from living trees, and be free from decay and other injurious defects.

Piles for temporary work may be of spruce, red oak, beech or other available material, and shall be of the dimensions specified for No. 1, unless a smaller diameter is specified in the order.

SHINGLES.

Shingles for high-grade work shall be of pine, cedar or cypress as specified, sixteen (16) or eighteen (18) inches in length, one-sixteenth ($\frac{1}{16}$) inch in thickness at the point and one-half ($\frac{1}{2}$) inch in thickness at the butt.

No butt less than seven-sixteenths ($\frac{7}{16}$) inch. Shall be absolutely free from sap, knots and other defects; four-inch, five-inch or 6-inch wide as specified. They shall be packed in uniform bunches of two hundred and fifty (250) shingles.

Shingles for common work will be of pine, cedar or cypress as specified, clear not less than eight (8) inches from the butt, and of the dimensions specified for clear or of random widths when so specified.

LONG-LEAF YELLOW PINE LUMBER.

Lumber must be cut south of North Carolina; short-leaf or loblolly timber will not be accepted.

All lumber must be sound, commercial long-leaf yellow pine (pine combining large coarse knots, with coarse grain, is excluded under these rules), well manufactured, full to size, and saw-butt, and shall be free from the following defects: Unsound, loose and hollow knots, worm holes and knot holes, through shakes or round shakes that show on the surface, and shall be square-edge, unless otherwise specified.

A through shake is hereby defined to be through or connected from side to side, or edge to edge, or side to edge.

In the measurement of dressed lumber the width and thickness of the lumber before dressing must be taken—less than one-inch thick shall be measured as one inch.

The measurement of wane shall always apply to the lumber in the rough.

Where terms one-half and two-thirds are used they shall be construed as referring to the area of the face on which measured.

In the dressing of lumber, when not otherwise specified, one-eighth inch shall be taken off by each planer cut.

a. **Flooring** shall embrace four, five and six quarter inches in thickness by three to six inches in width, excluding $1\frac{1}{2}" \times 6"$. For example: $1" \times 3"$, $4"$, $5"$ and $6"$; $1\frac{1}{4}" \times 3"$, $4"$, $5"$ and $6"$; $1\frac{1}{2}" \times 3"$, $4"$ and $5"$.

b. **Boards** shall embrace all thicknesses under one and a half inches by over six inches wide. For example: $\frac{3}{4}"$, $1"$, $1\frac{1}{4}"$ and $1\frac{3}{8}"$ thick by over six inches wide.

c. **Plank** shall embrace all sizes from one and one-half to under six inches in thickness by six inches and over in width. For example: $1\frac{1}{2}"$, $2"$, $2\frac{1}{2}"$, $3"$, $3\frac{1}{2}"$, $4"$, $4\frac{1}{2}"$, $5"$, $5\frac{1}{4}"$, $5\frac{3}{4}"$, by $6"$ and over in width.

d. **Scantling** shall embrace all sizes exceeding one and one-half inches and under six inches in thickness, and from two to under six inches in width. For example: $2" \times 2"$, $2" \times 3"$, $2" \times 4"$, $2" \times 5"$, $3" \times 3"$, $3" \times 4"$, $3" \times 5"$, $4" \times 4"$, $4" \times 5"$, $5" \times 5"$.

e. **Dimension Sizes** shall embrace all sizes six inches and up in thickness by six inches and up in width. For example: $6" \times 6"$, $6" \times 7"$, $7" \times 7"$, $7" \times 8"$, and $8" \times 9"$, and up.

f. **Stepping** shall embrace one to two and a half inches in thickness by seven inches and up in width. For example: $1"$, $1\frac{1}{4}"$, $1\frac{1}{2}"$, $2"$ and $2\frac{1}{2}" \times 7"$, and up in width.

g. **Rough Edge or Flitch** shall embrace all sizes one inch and up in thickness by eight inches and up in width, sawed on two sides only. For example: $1"$, $1\frac{1}{2}"$, $2"$, $3"$, $4"$, and up thick by eight inches and up wide, sawed on two sides only.

h. **Bridge Stringers** shall embrace $8" \times 16"$, 24 to 30 feet in length.

All lumber shall be sound. Wane may be allowed one-eighth of the width of the piece measured across face of wane, extending one-fourth of the length on one corner, or its equivalent on two or more corners, provided that not over 10 per cent. of the pieces of any size shall show such wane.

All sizes under nine inches shall show some heart entire length on one side; nine inches and over shall show some heart the entire length on two opposite sides. Wane may be allowed one-eighth of the width of the piece measured across face of wane and extending one-fourth of the length of the piece on one corner or its equivalent on two or more corners, provided that not over 10 per cent. of the pieces of any size shall show such wane.

Clear heart-faced flooring shall be clear heart-faced, rift-sawed, free from knots, shakes or sap. Face to be not more than two and a half inches.

Prime flooring shall show one heart face free from through or round shakes or knots exceeding one inch in diameter, or more than four in a board on the face side, not more than two and one-half inches face.

Boards seven inches and under wide shall show one heart face; over seven inches wide shall show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Plank seven inches and under wide shall show one heart face; over seven inches wide shall show two-thirds heart on both sides, all free from round or through shakes, large or unsound knots.

Scantling shall show three corners heart, free from through or round shakes or unsound knots.

Dimension Sizes—All square lumber shall show two-thirds heart on two sides, and not less than one-half heart on two other sides. Other sizes shall show two-thirds heart on face and show heart two-thirds of length of edges, excepting when the width exceeds the thickness by three inches and over, then it shall show heart on the edges for one-half the length.

Union - Pinopolis Saw Mills

M. F. AMOROUS, President

Atlanta, Ga.

Genuine Georgia Long-Leaf Pine

Bills Cut to Order

SHIP BY RAIL OR WATER

Shipping Ports: Brunswick
Savannah or Jacksonville

We are now Open to
Cut Orders for 1907

BRASS and Iron Machine Screws.

We cast eighteen times daily

STOVE BOLTS, Cap and Set Screws, Cotter Pins and Split Keys.
BRONZE, Brass, Copper and Aluminum Castings from 1 oz. to
2,000 lbs.

SHEET Copper and Brass Sheet, Rod and Wire.

GEAR Cutting, Machine Shop Equipment, the Latest Improved.

F. H. KORETKE BRASS & MFG. CO., Ltd.,

L. D. Phone 3407 Main

922, 924 and 926 Magazine Street, New Orleans, U. S.

Stepping shall show three corners heart, free from shakes and all knots exceeding half inch in diameter and not more than six in a board.

Rough Edge or Flitch shall be sawed from good heart timber, and shall be measured in the middle, on the narrow face, free from injurious shakes or unsound knots.

Wane on not over five per cent. of the pieces in any one size shall be allowed as on merchantable quality.

Bridge stringers 8"x16"—24' to 30' must show not more than two inches of sap on each corner of any point; shall have the heart near the center of the piece and be free from shakes, wane, knot clusters and all other defects which would impair the strength for the purpose intended.

NORTH CAROLINA PINE.

Edge-grain, kiln-dried, matched, tongued and grooved, width and thickness specified; well manufactured and free from all defects on face side of strip, such as knots, pitch pockets, edge splinters, grain slivers, etc. This material is intended for high-grade work, and should be first-class in every respect.

North Carolina Pine, width and thickness specified, no division as to grain, kiln-dried, matched, tongued and grooved; well manufactured from sound stock. The worst piece 16 feet long may contain four pine knots or two standard knots if sound and smoothly dressed, slight pitch streaks half sap stain; must lay without waste.

Width and thickness as specified, kiln-dried, tongued and grooved, double beaded. Shall be graded as No. 1 and No. 2 flooring. No. 1 shall be flat grain and carefully dressed, No. 2 no division as to grain.

OREGON (YELLOW) FIR.

All lumber shall be trimmed square, with fine saws on both ends, and cut to even lengths—the following rules are based on 16-foot lengths.

6"x6" and larger shall not be more than $\frac{1}{4}$ inch scant when green, and be evenly manufactured from sound stock with not less than three square edges, and must be free from knots, that will materially weaken the pieces. Timbers 10"x10" in size may have a 2" wane on one corner, or its equivalent on two or more corners, $\frac{1}{4}$ the length of the piece.

Other sizes may have proportionate defects. Seasoning checks and checks extending not over $\frac{1}{8}$ the length of the piece are admissible.

For select bridge material such as stringers, etc., shall be clear, free from cross grain or any defects impairing its usefulness; sound live knots not more than $\frac{3}{4}$ " in diameter one to each 10 lineal feet are admissible. Small tight pitch pockets equally well scattered will also be admissible.

OAK, WHITE OR BURR (FIRSTS AND SECONDS).

Dimension sizes, including 4"x4" to 12"x12", 10 feet and over, shall be manufactured from the butt of young thrifty trees, large enough to have the heart in the center; free from knots, checks and other defects.

The same as firsts, except that 6"x6" and over may have one inch sap on two corners; the heart need not be in the center; sound knots will be allowed if they do not impair the strength of the piece.

Plank, one to four inches thick and eight inches and over wide. Ten inches and under shall be clear; 11" to 14" will admit one standard knot or equal defect; 15" and over will admit two standard knots or equal defects.

Live sap admitted on one side not exceeding one-fifth the surface; one side shall be free from sap; a few sound knots one inch in diameter will be admitted.

Thickness shall be three inches, widths may be mixed 8, 10 and 12 inches; lengths may be mixed 12, 14 and 16 feet. Ends sawed square. Sound knots and two inches of sap on two corners allowed.

The entire face of the board must show figures produced by quartering. Great care must be exercised in the manufacture, and, where possible, a band-saw shall be used. Widths six inches and upward. Six to eight inches shall be clear; nine inches and over shall admit one or two standard knots in a piece sixteen (16) feet long.

POPLAR (WHITEWOOD) FIRSTS AND SECONDS.

Widths of ten inches and under; one face must be clear; over ten inches, one-twelfth bright sap will be allowed or one standard or two three-quarter knots in a board eight feet long, if there is no sap.

Widths of eight inches and under shall be clear on one side, and the other side may be half sap; over eight inches, one-tenth the face may be bright sap; or if there is no sap, two standard knots will be allowed.

HEMLOCK (FIRSTS, SECONDS, SHEET-PILING AND BOARDS).

Must be free from wanes, shakes, large, loose or unsound knots, thoroughly seasoned and true to size.

Dimension pieces of 6"x6" and under, and plank 2"x10" and under, shall be free from sap; over 6"x6" may have one inch sap on two corners, over 2"x10" may have one inch sap on two corners, one side shall be free from sap.

This material is intended for joists and framing of standard buildings, and should be good quality throughout.

Shall be well manufactured and of the size specified.

Dimension pieces 6"x6" and under may have one wane edge one inch diagonally, or one inch sap on two corners; over 8"x8" may have one inch sap on each corner, with one wane edge one inch diagonally. Knots will be accepted if their size and location do not weaken the piece. Pieces one to three inches thick and 6, 8, 10 and 12 inches wide Chicago "Common" shall have not more than one and a half inches sap on two corners. Unsound or large knots, which impair the strength of the piece shall not be allowed. When the material is to be used for flooring one side shall be clear of sap.

This material is to be used for temporary structures, framing for buildings of less importance, and for heavy flooring, etc.

Sheet piling shall be of the size specified. The ends shall be free from shakes and splits, which would weaken them in driving. The ends must be sawed square. Any defects will be admitted which will not weaken the piece for temporary use, or cause leakage. The edges shall be true and full.

For sheathing, snow fences, wing fences, etc., must be good, sound lumber, one inch in thickness, knots shall be sound and tight, and not large enough to injure the piece. Slight splits and shakes may be accepted.

SPRUCE.

Spruce will be graded the same as hemlock.

MAPLE.

Flooring shall be thoroughly seasoned, free from knots—face to measure not more than 2½ inches—shall be tongued and grooved, free from planer marks, edge splinters or other defects. Ends to be matched hollow back, in lengths of from 4' to 16'.

Ceiling and wainscoting shall be the same quality as flooring, and be double beaded.

CHESTNUT (FIRSTS AND SECONDS).

Include widths of 8 inches and over; eight to eleven inches wide shall be clear; twelve to fifteen inches will admit one standard knot.

Include widths of six inches and over; six to seven inches wide shall be clear; eight to eleven inches will admit two standard knots.

WHITE PINE.

Eight inches must be perfectly clear, and includes all clears, above 8". 10" to 12" will admit one small knot, the size of a ten-cent piece, and must be free from sap and shakes.

Twelve inches to fourteen inches wide will admit of two small knots, or one knot, and a small amount of bright sap, on one side, and free from shakes.

Eight inches to twelve inches same as 4/4".

Fourteen inches and up, will admit of one 2-inch knot, near one end, or a small amount of dark sap, on one face, otherwise perfect.

Eight to twelve inches wide admits of two small knots, with 2 to 4 inches of bright sap on back, or one clear face, with a very small amount of dark sap on one edge of back.

Twelve inches to fourteen inches will admit of three small knots or more, if pine be very wide, otherwise perfect, or small amount of bright sap on both sides, and one or two very small knots, or one clear face, with two or three inches of dark sap on back.

Practically the same as 4/4" with some extra defects, for thickness and wide pieces. Very wide pieces may have a little shake on one end.

Eight inches to ten inches may have one or two small knots on face, and bright sap on back, or one practically clear face, with sap or fine shake on back. Very wide pieces will admit of some shake running clear through the piece, on one end.

The amount of knots, shakes and sap allowable on a piece, depends on width, and length of piece.

Must cut ¾ clear or better, of all defects, and any kind of defect allowed, providing they do not interfere with cutting good lengths, between defects.

Must cut ½ clear of all defects.

Practically clear, with very little shake on face, and any amount of shake on back.

Allows any number of small sound knots, in center of piece, but none on edges.

Size of knots depends on width, and length of piece. No dark sap allowed.

Same as dressing, but must be 13 inches or over in width.

Allows any number of red knots, providing they are not of a size to weaken the piece. Edges practically free from knots. None but very tight knots allowed. Very little dark sap. No shake.

Allows any number of red knots of any size, and very few small black knots, that will not dress out. Black sap allowed on back. No rot, or bad splits.

Takes any amount of red knots, of any size, and some black knots, providing they do not weaken the piece. Some shake, and a good proportion of black sap on one side. Some heart checks allowed.

Will allow shake, black knots, heart checks, black sap and a few small worm holes. The same as Hemlock Sheet-Piling.

Approved,

C. J. PARKER, Prin. Ass't Engineer.

O.K., W. H. K.

Grand Central Station, January 1, 1902.

Revised March 1, 1906.

THE NEW YORK, CHICAGO & ST. LOUIS RAILROAD CO.

OFFICE OF THE PURCHASING AGENT.

INSTRUCTIONS GOVERNING THE INSPECTION OF HARDWOOD LUMBER.

Where no specifications are furnished, it is understood that sound lumber, sawed from living timber, only, is to be accepted.

When lumber is shipped without inspection, it will be inspected at point of destination by inspectors of the department to which the material is consigned.

Pieces that do not pass company's inspection will be culled and shown on inspection sheet under heading, "Culls, Company's Inspection." If part of the culls can be used by sawing off unsound parts, they will be shown on inspection sheet under heading, "Milled to Company's Inspection."

Culls that can not be used by company for any purpose will be held subject to the order of the shipper. If returned to the shipper he must bear cost of loading and all freight charges.

Culls not disposed of by the shipper within thirty (30) days after inspection, will be taken by this company, but no compensation will be allowed therefor, unless special arrangement has been made.

Cleveland, Ohio, May 25, 1900.

SPECIFICATION AND BILL OF TIMBER FOR ONE SET OF SWITCH TIES FOR STANDARD SPLIT SWITCH.

Bill of Timber.

2 pieces	7x10"—16'-0"	Head Blocks	187 feet B.M.
3 pieces	7x 9"— 8'-0"	Switch Ties	126 feet B.M.
7 pieces	7x 9"— 8'-6"	Switch Ties	312 feet B.M.
7 pieces	7x 9"— 9'-0"	Switch Ties	331 feet B.M.
5 pieces	7x 9"— 9'-6"	Switch Ties	249 feet B.M.
4 pieces	7x 9"—10'-0"	Switch Ties	210 feet B.M.
4 pieces	7x 9"—10'-6"	Switch Ties	220 feet B.M.
3 pieces	7x 9"—11'-0"	Switch Ties	173 feet B.M.
3 pieces	7x 9"—11'-6"	Switch Ties	181 feet B.M.
3 pieces	7x 9"—12'-0"	Switch Ties	189 feet B.M.
3 pieces	7x 9"—12'-6"	Switch Ties	197 feet B.M.
3 pieces	7x 9"—13'-0"	Switch Ties	205 feet B.M.
2 pieces	7x 9"—13'-6"	Switch Ties	142 feet B.M.
1 piece	7x 9"—14'-0"	Switch Ties	74 feet B.M.

50 pieces.

2,796 feet B.M.

Specifications.

All timber must be sawed from green or living white or burr oak, free from rotten knots, dote or shake. They must conform to dimensions given. When loaded by mill men, they must be loaded in complete sets. When piled on right of way, they must be in distinct sets, not closer than six feet to main or side track.

Cleveland, Ohio, August 28, 1905.

SPECIFICATIONS FOR YELLOW PINE BRIDGE AND CAR TIMBERS.

Long Leaf Yellow Pine Bridge Ties.—Must be strictly all heart, except that not to exceed one inch of sap will be allowed on two corners if piece is otherwise first-class. Must be tight-hearted, sawed full size, with square edges, to the dimensions given. Must be free from rot or decay, loose, rotten or unsound knots, through shakes or splits. Must be sawed from live, thrifty, green timber, and be well manufactured.

Long Leaf Yellow Pine Car Sills.—Sills ten inches and up wide require two-thirds heart on both faces the entire length of the sill; under ten inches wide requires one heart face and two-thirds heart on opposite side the entire length. Must be free from round or through shakes, large, loose, or unsound knots, rot or decay. Must be sawed from live, thrifty, green timber. Must be sawed full size with square edges.

Long Leaf Heart Faced Yellow Pine Decking.—May be six, eight or ten inches wide, and must be dressed to blue-print plate 1968-A. Must be free from sap on one face; knots must be sound and not too coarse, a ten-inch piece to admit of larger knots than a six-inch piece. The location of the knots must be such as to not impair the strength or usefulness of the piece, nor occur on the edge where the planks are lapped, except they must be absolutely sound and firmly imbedded in the piece. Decking must be free from rot or decay, loose, rotten, unsound or extremely coarse knots, round or through shakes.

Short Leaf Yellow Pine Car Siding.—It shall consist of A and B strips of first and second clear quality. The poorest strip in this assortment shall at the length of 16 feet not have more than two sound knots, each not over one-half inch in diameter, or if one, the equivalent thereof, and no loose, or rotten knots allowed, and must be entirely free from splits, shakes or rot. The different grades above described must be furnished in equal proportions, but the lowest line strips shall not exceed 25 per cent. of the whole quantity.

W. P. DITTOE, Purchasing Agent.

Cleveland, Ohio, December 2, 1903.

INSTRUCTIONS

FOR THE GOVERNMENT OF LUMBER, TIE AND TELEGRAPH POLE MANUFACTURERS AND INSPECTORS.

These Rules Also Used by the Cumberland Valley Railroad Company and New York, Philadelphia & Norfolk Railroad Company.

SPECIFICATION No. 1.

White Pine, Missouri and Arkansas Short Leaf Pine and California White Pine, for Refrigerator Cars and for Steamboats.—Must be furnished for roofs to length as ordered. Must be dry, for roofing shall consist of strips 1-inch thick, known in Chicago grading as first and second clear. Must be full thickness and width. No. 2 strip will admit of a narrow bright sap, or one or two small sound knots on one side only and shall not consist of more than 40 per cent. of the whole quantity. When roofing is ordered finished, the best strips to be worked with the grooves on the best side and poorest strips on the face which contains the knots. This is based on a 6-inch strip. California White Pine, bright sap no defect.

For Steamboat Siding, it must be perfectly dry and only first clear will be admitted. Must be full thickness and width ordered. Must be free from knots, sap, shakes and splits and may be ordered dressed on one side and matched, or dressed on both sides and matched. In both cases it must be full seven-eighth inches thick, length 8 to 16 feet.

SPECIFICATION No. 2.

White Pine, Missouri and Arkansas Short Leaf Pine and California White Pine, "Car Siding" and Stock Car Roofing.—Must be furnished to length as ordered. Must be dry, and shall consist of strips one inch thick. Must be perfect in thickness and width, known in Chicago grading as first and second clear, and A and B strips. The poorest piece will admit of not more than four sound knots, not over one inch in diameter, based on a 6-inch strip 16 feet long; and on an 8-foot strip 6 inches wide, not more than $1\frac{1}{4}$ inches of bright sap on the face side, all to be entirely free from shakes and splits. The best strips to be worked with the best side out, and the poorest strips with the face or sap side out. The poorest strips shall not consist of more than 30 per cent. of the whole quantity. California White Pine, bright sap no defect.

PENNSYLVANIA RAILROAD COMPANY.

SPECIFICATION No. 3.

White Pine, Missouri and Arkansas Short Leaf Pine and California White Pine, Car Roofing and Flooring for Below Decks of Boats.—Shall be a good grade of common flooring and except for boats, one inch thick, there may be a number of small sound knots, but none at the edges that will damage the piece by dressing and matching. The poorest strip shall not contain in a width of 6 inches on the heart face side, more than 2 inches of bright sap and not more than 3 inches on the opposite side, and it can be distributed over the face. It must be free from through shakes and large or loose knots. The finished thickness of the flooring for below decks of boats is $1\frac{1}{8}$ inches, to be dressed on one side and matched. Length 8 to 16 feet.

No shipment of any of the White Pine described in this specification to be accepted if it contains more than 25 per cent. of the poorest strips. California White Pine, bright sap no defect.

SPECIFICATION No. 4.

White Pine No. 1 Barn.—This grading in White Pine is known to us in the Buffalo market as "No. 1 Barn Boards." It must be absolutely a tight, sound-knotted board, free from shakes and splits, and will not admit of any imperfections that will weaken the piece. This lumber will be graded from both sides, but the knots can be slightly larger on one side than on the other. Must be full thickness as ordered.

SPECIFICATION No. 5.

White Pine, Missouri and Arkansas Short Leaf Pine, "No. 2 D Stock."—This is a selection known at this company's yard as "No. 2 D Stock" boards, strictly a grade between No. 1 Common and No. 1 D Stock. It shall be inspected in accordance with the following specifications. The width shall be 8, 10 or 12 inches, as required. All round knots must be sound and not over two inches in diameter, fairly intergrown to prevent falling out. Cat knots that do not weaken the boards are not objectionable. If there are only a few knots, they may be larger, provided they do not impair the strength of the boards. A split 12 inches long at one end, if straight, may be accepted, but such boards shall not exceed 5 per cent. of the whole amount. Must be full thickness.

SPECIFICATION No. 6.

White Pine, "Select."—Its width will vary from 8 to 16 inches. It must be free from splits and shakes. Two or three sound knots one-half inch in diameter will be allowed, according to width of piece and location. Bright sap will be allowed equal to $1\frac{1}{2}$ inches on one edge or its equivalent on both edges of face of a 10-inch board, increasing proportionately with width and must be full thickness as ordered.

SPECIFICATION No. 7.

White Pine, "Fine Common," Missouri and Arkansas Short Leaf Pine and California Pine.—To be 8 inches and up wide. Must be free from splits and shakes. At 10 inches may show bright sap equal to 2 inches on face side on one edge or its equivalent on both edges. Three sound knots not over one inch in diameter will be allowed. In wider lumber, additional sap will be allowed, in proportion to the increased width. To be full thickness as ordered. California White Pine, bright sap, no defect.

SPECIFICATION No. 8.

White Pine, "First and Second Clear."—Should be 10 inches and over in width. When 10 inches, should be free from all defects. A 12-inch piece must have a perfect face. One-half inch of white sap on each edge or one inch of sap on one edge of back will be allowed. In the absence of sap, one or two small pin knots not to exceed one-half inch in diameter are admissible. Pieces wider than 12 inches must have a perfect face, but can have sap or knot defects proportionately greater as the piece is wider, but not of such character as to decrease its value beyond the standard of a 12-inch piece of above description. In every case shakes will not be permitted. For wide pieces, specify the percentage of widths. Must be full thickness as ordered.

SPECIFICATION No. 9.

White Pine, "No. 1 Dressing."—This grade is known to us in the Buffalo market as "No. 1 Dressing." It must be absolutely a tight, small, sound, red-knotted board, free from shake and splits, and must have one clear edge. Sap boards not admitted. It is to be graded from the best side, and will not admit of any imperfections that will weaken the piece. Must be full thickness as ordered.

SPECIFICATION No. 10.

White Pine, "No. 1 Cuts or Shop Lumber."—This lumber to be known as No. 1 Cuts or Shop Lumber, for general use, such as sash, doors, cases, etc. To be 7 inches and up wide, and to cut three-fourths clear lumber in lengths of 4 to 6 feet. The knots may be large and unsound but so located that the piece will cut in the proportion as noted above. To be free from shake, and full thickness as ordered.

SPECIFICATION No. 11.

"Piece Stuff."—To be White Hemlock, White Pine, Norway Pine or Chestnut. It will be ordered of the following dimensions, as required: 2x4, 2x6, 2x8, 2x10, 2x12, 2x14, and 3 inches thick of any required widths; also 4x4 and 4x8 and up. This lumber will be inspected under the following specifications: Must be free from blue sap, bad splits and shakes, especially when not straight, must be full width and thickness and well manufactured. A few small worm holes are not objectionable in dimension sizes, but not enough to weaken the piece or of a generally unsightly character. The knots must be tight and sound, and not coarse enough to weaken the piece.

Long Leaf Yellow Pine.—When inquiries are sent out from the purchasing agent's office asking for quotation of prices for Southern Yellow Pine, such inquiries are for price subject to the lumber being inspected before shipment.

To insure prompt shipment and loading of Yellow Pine from the Southern Pine districts that is to be inspected before shipment, the following plan should be pursued by the shipper:

First: The lumber should be at the wharf, and just as soon as vessel is ready for loading, the purchasing agent should be notified to avoid sending an inspector too soon, and in order to send him promptly, that vessel may be loaded in its time allowance.

Second: Orders placed with the mills to be shipped by rail should be so nearly completed that when the inspector arrives he should be able to load all of it on the cars in the usual time required for loading vessels.

Lumber inspected at the shipping points will be stamped with the inspector's mark, but not counted; it will be counted, **not inspected**, when it is unloaded from vessel or cars.

Description.—All the Yellow Pine described in Specifications Nos. 12, 13, 14 and 15 must be Long Leaf Yellow Pine cut in the interior of the Yellow Pine belt in Georgia, Florida, Alabama or Mississippi. No Short Leaf Yellow Pine or loblolly will be accepted; pine combining large, coarse knots with coarse grain is excluded under these rules; sound knots will be allowed providing the number, size and location of same does not impair the strength of the piece for the purpose intended. No cluster of knots will be allowed. Must be free from wane, injurious checks, splits, shakes, decay in form of red streaks shown on end or face of the piece, generally known as red heart, or any other defects which will impair the strength or durability of the piece for the purpose intended. Must be of full size, square-edged and butt-sawed, a standard knot being considered 1½ inches in diameter. See Classification, Specification No. 39.

SPECIFICATION No. 12.

Yellow Pine, "Boards and Planks."—First common and long leaf Yellow Pine in boards and plank 9 inches and under wide, the poorest piece shall show one heart face and two-thirds heart on opposite side. When of widths greater than given above, the poorest piece shall show not less than two-thirds heart on both sides.

"Side and End Planks for Gondola Cars."—Must be square-edged, knots must be intergrown, perfectly sound and not over 2 inches in diameter, and must show at least two-thirds heart on both sides.

SPECIFICATION No. 13.

Yellow Pine, "Car Flooring."—If car flooring is ordered rough, it must be of the width, thickness and length as may be specified on the order. If ordered to be dressed and matched by the shipper, it must be manufactured in accordance with sample or blue-print furnished by this company. It must be perfectly sound lumber, clear of splits, shakes and knots exceeding 1½ inches in diameter. Sound knots less than 1½ inches in diameter will be allowed, but not more than four in a piece. The poorest piece shall show one entire heart face and not less than two-thirds heart on the opposite side.

SPECIFICATION No. 14.

Yellow Pine, "For Side Sills, Stringers, Plates, Rock Plank and Roof Ribbs."—Nine inches and under wide shall show one heart face and two-thirds heart on opposite side. Over nine inches wide, shall show two-thirds heart on both sides, entire length. All

free from round or through shakes and large or unsound knots. (Note.—Designate nailing sills as scantling, Specification No. 39.)

For passenger car sills the poorest piece must show one heart face and two-thirds heart on other sides entire length. All free from round or through shakes and large or unsound knots.

SPECIFICATION No. 15.

Norway Pine, White Pine.—To be free from rot, large or loose knots, bad shakes and splits. In boards and plank 9 inches and under wide, the poorest piece shall show one heart face and two-thirds heart on opposite side; greater widths shall show two-thirds heart on both sides.

SPECIFICATION No. 16.

Cypress.—For tank stock it may have sap one inch wide on one side, to extend not over one-half the length, and half the thickness of the piece, and sound knots that do not impair its usefulness for tank purposes, in widths of 5 inches and over, and 8 feet long and over.

Oak and Hickory.—All the oak and hickory described in these specifications are based on inspection adopted from years of experience by the Pennsylvania Railroad Company. Hickory and red oak will only be accepted when regularly ordered and specified, and will be inspected under the same conditions governing Nos. 17, 18 and 19.

Description.—All the oak on these specifications must be free from decay, splits and shakes, full size as ordered and square-edged, except when flitched lumber is specified. All flitched lumber to be sawed on two face sides only and not on edges and for ship purposes cut from crooked trees. For description of knots see specifications.

SPECIFICATION No. 17.

Second Growth White Oak, Burr Oak, Rock or Chestnut Oak and Red Oak.—To be manufactured with the heart boxed. Must be free from large or unsound knots. Sound knots not exceeding $1\frac{1}{2}$ inches in diameter may be allowed, if they do not affect the strength of the piece.

SPECIFICATION No. 18.

White Oak, Burr Oak, Rock or Chestnut Oak, Red Oak and Hickory.—Must be manufactured from tough logs. It must be free from large or unsound knots. Pieces having sound knots, so located as to impair their strength or durability, will be rejected. The hickory may be pig-nut or shell-bark, and will be inspected for defects precisely as is the case with oak.

SPECIFICATION No. 19.

White Oak, Burr Oak, Rock or Chestnut Oak and Red Oak Flooring.—Must be free from sap on one side. Knots to be sound and not exceeding $1\frac{1}{2}$ inches in diameter.

SPECIFICATION No. 20.

Quartered White Oak.—It shall be graded and inspected as first and second. The width must be 5 inches and upwards. Must be free from all defects up to 8 inches in width. In pieces up to 11 inches wide, from one to two standard knots may be allowed, and more knots in proportion to the greater width. The entire face of the board must show the figures brought out by proper quartering. This lumber being required for ornamental purposes only, should be manufactured from large logs, by band-saw. Ten per cent. must be 13 inches and up in width.

SPECIFICATION No. 21.

White Ash "First and Second."—Firsts and Seconds must be 6 inches wide and over, and clear up to 8 inches. At 8 inches defects may be allowed equivalent to two standard $1\frac{1}{2}$ -inch knots, and an allowance of more defects may be made in proportion to the increased width and thickness. Must be free from hearts and dry rot. Sap shall not be considered a material injury if bright and in good condition. Ten per cent. to be 12 to 14 inches wide.

SPECIFICATION No. 22.

Yellow Poplar "First and Second."—Firsts must be 10 inches or more in width and free from all defects. Seconds shall not be less than 8 inches in width, and clear up to 10 inches; but at 10 inches, may have two knots of standard size, or one inch of bright sap. If the pieces be wider, more standard knots may be allowed in proportion to the width. The two grades above enumerated may be combined in one grade, to be designated as firsts and seconds, in which the proportion of seconds shall not exceed 50 per cent. of the whole quantity.

SPECIFICATION No. 23.

"Telegraph Cross-Arms."—Must be made of seasoned cypress, Norway pine, white pine, spruce or Oregon fir. To be furnished of lengths as ordered. It must be straight, close-grained, sound and must not contain splits or shakes. No piece shall show more than 5 per cent. sap, and no large, loose or unsound knots will be allowed. Knots not larger than 5-10 inch will be permitted if they do not impair the strength of the piece.

SPECIFICATION No. 24.

"Push Poles."—Must be of Oregon fir, heart lumber, sound, free from shakes, splits, knots and close-grain.

SPECIFICATION No. 25.

White Maple, "First and Second."—Firsts and seconds must be six inches wide and over. At eight inches, one, and ten inches, two standard knots or equal defects may be allowed.

An allowance for more defects of this character may be in proportion to increased width.

SPECIFICATION No. 26.

White Maple Flooring for Passenger Equipment Cars.—The quality shall consist of firsts, must be clear, kiln dried, furnished to length, width and thickness ordered, dressed, polished, tongued and grooved, hollow back and bored for nails. When ordered for Dormant scales, say how it shall be worked.

SPECIFICATION No. 27.

For Side Fenders for Tug Boats.—To be made of hickory, oak or sweet gum, in lengths from four and a half feet to five and a half feet, and cut from trees about seven inches in diameter, one side to be flattened and the other to be left in its natural state, the bark being removed and small knots trimmed down; to be free from large knots and of fairly smooth surface; both ends to be rounded and to have a hole for the fender rope one and a half inches in diameter, cut from fourteen inches to twenty inches from the smaller end, bored through the edge, edges of these holes to be chamfered; diameter of the fender not to vary more than one inch from the size specified, and preferably to be cut from the butt end of young trees.

SPECIFICATION No. 28.

Hackmatack Knees.—Hackmatack knees must be furnished to the thickness specified on order. Must be sound and free from bad cracks. To be inspected and selected before shipment.

SPECIFICATION NO. 29.

First Quality Locust for Cross-Arm Pins.—All the pins required for cross-arms must be well and correctly manufactured to size. Must be first quality, sound, clear, split locust, free from knots, worm holes and sap. Will be ordered to finished size, or as shown on blue print.

SPECIFICATION No. 30.

Spruce.—To be well manufactured to full size as ordered, straight-grained, square-edged, free from decay, splits, shakes, large, loose or rotten knots, grub-worm holes or any other defects which will materially impair its strength.

SPECIFICATION No. 31.

Ship-Yard Classification—Description and Quality.—To be long-leaf yellow pine, cut in the interior belt of Georgia, Florida, Alabama or Mississippi. No short-leaf or loblolly will be accepted.

Description.—Must be sound, well manufactured, evenly sawn, square-butted with saw, free from unsound knots, wane, worm holes, injurious checks, splits, shakes, decay in any form, or any other defect that will impair the strength or durability of the lumber. Must be furnished to full size as ordered, whether dressed or rough.

Dimension Sizes.—All square lumber, the poorest piece shall show two-thirds heart on two sides, and not less than one-half heart on two other sides. Other sizes shall show two-thirds heart on faces and show heart at least two-thirds of the length on edges, excepting where the width exceeds the thickness by three inches or over, then it shall show heart on the edges for at least one-half the length.

Deck Plank.—Will be ordered to size. Shall show one entire heart face and not less than three-fourths heart on opposite side. Sound knots admitted not exceeding one inch in diameter, nor closer than four feet apart. When ordered finished the plank must be worked on the sap side and with either square or caulking edges, as will be specified, and if necessary a sketch will be furnished.

Deck Sheathing.—To be five inches wide, two inches thick when finished, dressed on heart side and both edges, opposite side to show not less than two-thirds heart.

Boards, Plank and Scantling.—For boards, plank and scantling, see specifications Nos. 12 and 39.

SPECIFICATION No. 32.

Dimension Sizes, for Bridges, Trestles and Piers—Yellow Pine.—For stringers, caps and sills, floor beams and chords, the poorest piece shall show two-thirds heart on opposite faces and heart throughout the entire length on other two sides, in order to get heart wood for bearings, mortises, etc. Such pieces to be designated on order. For posts and braces, see dimension sizes, specification No. 39.

SPECIFICATION No. 33.

Original Growth White Pine, Oregon Fir.—If white pine or Oregon fir should be used for bridges, etc., the poorest pieces shall be free from blue sap, splits and shakes. The knots must be tight, sound and not coarse enough to weaken the piece.

This specification includes stringers, cap sills, vertical pieces, braces, etc.

SPECIFICATION No. 34.

Locust, White Oak, Rock Oak or Post Oak Switch Timber.—Switch-ties must be made of living timber, of good quality, free from decay, decayed knots or other unsound parts. White oak, rock oak, post oak and locust in complete sets will be the only kinds of timber admitted unless otherwise specified.

Standard size, seven inches thick and ten inches face. Must be sawed on four sides, except pieces twelve feet and longer; these may be sawed on two sides only if desired. Wane will be allowed to the extent of two inches on the two face sides. Must be full thickness. To be sawed off square at each end and stripped of the bark.

For length and number of pieces to the set, ask for special specifications.

SPECIFICATION No. 35.

Oak Crossing Plank.—Unless otherwise specified, red oak will be ordered. It must be free from rot, splits and bad shakes; will allow one inch of wane on two corners (measured diagonally across) on the same face side. Will be ordered to size. When yellow pine is ordered, specify plank, specification No. 12.

SPECIFICATION No. 36.

Fence Posts.—Fence posts to be of white oak, rock oak, post oak, chestnut, yellow pine, locust or cedar, to be free from decay, splits and shakes.

HARDWOODS.

Walnut, Cherry, Mahogany, Chestnut, Etc.—Hardwoods, other than those already provided for in the specifications, such as walnut, cherry, mahogany, chestnut, etc., when ordered should be specified as "firsts and seconds," the percentage of seconds, width and thickness should be given and say to be dry.

PILING.

Will be bought by the lineal foot. Top and butt measurements as well as length should be given, also specify the kind of wood.

SPECIFICATIONS FOR CROSS-TIES No. 37.

Revised March 24, 1902.

Kinds of Timber.

The approved timber for cross-ties shall be white oak, rock oak, burr oak, post oak, locust, walnut, yellow pine or chestnut. Other kinds of wood will not be accepted, unless regularly ordered and specified.

Quality and Manufacture.

The timber should be cut in the fall and winter, say from September 1st to March 1st. All ties must be cut from good, sound living timber, well manufactured to size and length, straight, free from large, loose or decayed knots, splits, shakes or any other defects that may impair the strength and durability of the timber for the purpose intended; pole ties must have two parallel face sides, hewn or sawed with the grain of the wood out of wind or twist, and stripped of bark. Square sawed ties must be sawed with the grain of the wood; square hewed ties may be made of split timber, but must be straight and out of wind or twist. Yellow pine must be long-leaf, grown in the interior belt of Georgia, Florida, Alabama or Mississippi. Yellow pine ties must be square, and may be hewed or sawed; the heart should be in the center and not more than one inch of sap, measured on the face or side, will be allowed on each corner. All ties must be sawed off square at the ends.

Pole ties less than six inches face, square-sawed or square-hewed ties less than seven inches face, and yellow pine ties less than eight inches* face, will be classed as culls, and will not be accepted unless specially ordered.

CLASSES OF TIES.

The following tabe shows the kind, size and permitted variation of cross-ties:

KIND OF TIES	SIZE	VARIATIONS IN THICKNESS	VARIATIONS IN WIDTH	VARIATIONS IN LENGTH.
No. 1 Pole.....	7" thick x 7" face x 8' 6" long.....	¼" under and ½" over 7".....	7" over	1" under and over
No. 2 Pole	Not less than 6" face	Not exceeding ¾" under 7" .....	.....	1½" under and over
No. 1 Square Sawed.....	7" thick x 9" face x 8' 6" long.....	¼" under and ½" over 7"....	1" under and 5" over..	1" under and over
No. 2 Square Sawed.....	Not less than 7" face.....	Not exceeding ¾" under 7" .....	.....	1½" under and over
No. 1 Square Hewed...	7" thick x 9" face x 8' 6" long.....	¼" under and ½" over 7"....	1" under and 5" over..	1" under and ov
No. 2 Square Hewed...	Not less than 7" face	Not exceeding ¾" under 7" .....	.....	1½" under and ove
No. 1 Yellow Pine.....	7" thick by 9" face x 8' 6" long.....	¼" under and ½" over 7"....	Not over 5".....	1" under and over
No. 2 Yellow Pine.....	*Not less than 8" face, including sap allowance. If face is all heart, should be classed as No. 1	¼" under and ½" over 7"....	.....	1½" under and over

The number of second-class ties required should be specified when ordering.

All ties in the above classes that are longer than the limiting figures given will be taken at a reduction of five cents each to pay for cutting them to standard length.

INSPECTION, LOADING AND STACKING.

Ties will be inspected when delivered at designated suitable and convenient places. This company reserves the right to inspect ties at point of shipment or at destination. When inspected at point of shipment, contractor in shipping by rail must load the different classes of ties in separate cars if required. Ties furnished along the line of the railroad must be delivered at suitable and convenient places, stacked up in square stacks of about fifty each, with alternate layers crossing each other, with sufficient space between ties to allow a free passage of air; two ties only should form the bottom layer, placed on stones or logs. They should be stacked in a location which is as high or higher than the grade of the railroad, in such position as to permit of being easily counted and inspected.

Shipments by Water.

Ties transported by water must be delivered by the shipper F. O. B. the unloading wharf designated by the railroad company, or F. O. B. cars, if cars are within reach of the unloading derrick.

Payments.

Bills will be made for all ties received and accepted prior to the 15th day of each month. Payments for same will be made on or about the 15th day of the following month.

SPECIFICATION No. 38.

For Standard Telegraph Poles.—Telegraph poles shall be of three classes.

Along the main lines of the system or where the ultimate capacity of the line will exceed eight (8) wires, the poles must be in general of the first-class and thirty feet long.

On other parts of the line where cross-arms are used, the poles must be in general of the second-class and thirty feet long.
On pole lines not intended for cross-arms, but where the wires are carried on brackets, the poles may be of the third class.

General Specifications.—All poles must be of the best quality, second growth, live white chestnut cut during the winter months, butt cuts, squared at both ends, reasonably straight, well proportioned from top to butt, peeled, knots trimmed close, and subject to inspection at points of shipment. Any pole failing to meet all the requirements of these specifications will be rejected.

First-Class Poles.—First-class poles must conform to the following dimensions:

Length in Feet.	Minimum Circumference at Top in Inches.	Minimum Circumference. Six Feet from Butt in Inches.
25	25	33
30	25	36
35	25	40
40	25	43
45	25	47
50	25	50
55	25	53
60	25	56
65	25	59
70	25	62
75	25	65

Second-Class Poles.—Second-class poles must conform to the following dimensions:

Length in Feet.	Minimum Circumference at Top in Inches.	Minimum Circumference. Six Feet from Butt in Inches.
25	22	31
30	22	32
35	22	34
40	22	38
45	22	43
50	22	47
55	22	50
60	22	53
65	22	56
70	22	59

Third-Class Poles.—Poles which do not conform to the standard dimensions for the second-class poles will be classed as third-class poles, but such poles must be at least nineteen inches in circumference at the top.

SPECIFICATION No. 39.

Classification.

Flooring shall embrace four and five-quarter inches in thickness by three to six inches in width. For example, 1x3, 4, 5 and 6; 1¼x3, 4, 5 and 6.

Boards shall embrace all thicknesses under one and a half inches by seven inches and up wide, including one and a half inches in thickness by seven in width. For example, ¾, 1, 1¼ and 1½ inches thick by 7 inches and up wide.

Scantling shall embrace all sizes from two to five inches in thickness, and two to six inches in width. For example, 2x2, 2x3, 2x4, 2x5, 2x6, 3x3, 3x4, 3x5, 3x6, 4x4, 4x5, 4x6, 5x5 and 5x6.

Plank shall embrace all sizes from one and a half to six inches in thickness, not including six inches by seven inches and up in width. For example, 1½, 2, 2½, 3, 3½, 4, 4½, 5, 5¼, 5½, 5¾x7 inches and over wide.

Dimension Sizes shall embrace all sizes six inches and up in thickness by seven inches and up in width, including six by six. For example, 6x6, 6x7, 7x7, 7x8, 8x8, 8x9 and up.

Inspection.

Scantling shall show three corners heart, free from injurious shakes and unsound knots.

Dimension Sizes.—All square lumber shall show two-thirds heart on two sides, and not less than one-half heart on two other sides. Other sizes shall show two-thirds heart on faces, and show heart two-thirds of the length on edges, excepting where the width exceeds the thickness by three inches or over, then it shall show heart on the edges for one-half the length.

All stock to be well and truly manufactured, full to sizes and saw-buttcd.

SPECIFICATION No. 40.

Dunnage Braces.—Can be made out of any kind of strong wood. May be furnished in single or double lengths; to be sawed on two sides straight. The ends to be beveled back from one inch thick to twelve inches long. Large knots or defects of any kind that will weaken the piece will not be accepted. The pieces to equal in size 3x4 or 4x4. Will be bought by the piece or board measure foot.

SPECIFICATION No. 41.

Cord Wood.—Can be pine, oak, chestnut or cedar, intermixed. Must be dry and cut in lengths of four feet, 128 feet to the cord. Can be split or round, three to six inches in diameter. Slab wood may be furnished but not less than three inches thick.

PHILADELPHIA & READING RAILWAY COMPANY.

SPECIFICATIONS FOR STANDARD CROSS-TIES.

All ties must be made of sound or living white, rock or chestnut oak or white chestnut timber of good quality, straight and free from decayed knots, wind shakes, sap, rot or other imperfections.

First Class.—Ties hewed or slabbed must be eight and a half feet long, seven inches thick, and not less than seven inches nor more than fourteen inches on narrowest face, with ends cut square and peeled.

Sawed ties must be sawed straight and true, parallel with the grain, and free from wane or wind shakes, and must be seven inches thick for their whole length, and not less than nine inches on narrowest face. No variation will be allowed in length and thickness above given.

Second Class.—The same as first, but not less than six inches face; of which not more than 20 per cent. of total deliveries will be received.

Ties of less than six inches face will be considered as culls, only a limited number of which will be received, at the option of the company, and at such prices as may be from time to time agreed upon.

Hewed ties shall be hewed smooth and true upon two parallel faces, with a uniform thickness. Ties slabbed with a saw, and only one tie from a section of a tree, will be counted as hewed ties.

Where ties are delivered on the line of the railway they must be stacked up in square stacks of fifty each, with alternate layers crossing each other, on the ground fully as high or higher than the grade of the railway, and in such position as to admit of being counted and inspected. In case of neglect to do this on the part of the owner he will be charged with the increased cost of inspection and loading in consequence thereof. When loaded on cars ties must be delivered on tracks of this company free of freight charges.

Oak and chestnut ties must be piled or loaded separately, and should be plainly marked with the name of the owner to insure the payment being made to the proper person.

Ties will be at owner's risk until accepted, and when rejected must be removed from the premises of the company within thirty days, after the expiration of which time ground rent will be charged.

Specifications for Standard Yellow Pine Cross-Ties.

All ties must be made of green or living long-leaf Georgia or Florida yellow pine timber of good quality, that has not been bled or tapped; hewn smooth and straight on four sides, with ends sawed square, free from injurious knots, wind-shakes, doty hearts, worm holes, or other imperfections, and to be considered first-class must be seven inches thick, not less than nine inches face and eight and a half feet long, with not more than one inch of sap on each corner. No variation will be allowed in length and thickness above given.

Before any ties will be received, a contract in the shape of a formal order from purchasing agent, and an acknowledgment from shippers of their acceptance of the same subject to the above specifications must be received.

Ties will be at owner's risk until accepted, and when rejected must be removed promptly from the premises of the company, or storage and cost of extra handling, if any, will be charged.

Approved:

THEODORE VOORHEES,
First Vice-President

J. D. LANDIS,
Purchasing Agent.

THE PITTSBURG & LAKE ERIE RAILROAD COMPANY.

ROAD DEPARTMENT LUMBER SPECIFICATIONS.

White pine 1x6 up to 24 inches by 16 feet, surfaced two sides for shop use, must be thoroughly dry, free from dead and knots, wind shakes, sap, deep sun checks and decay. Must not have more than eight small live knots in each board 1x12 up to 24 inches by 16 feet, and not more than four live knots in each board 1x6 up to 12 inches by 16 feet.

White pine flooring, finished sizes $\frac{7}{8}$ "x $3\frac{3}{8}$ "x16'. Must be thoroughly dry, free from dead and large knots, wind shakes, sap, deep sun checks and decay. Will allow three small live knots in each board $\frac{7}{8}$ "x $3\frac{3}{8}$ "x16'.

White pine siding. Finished sizes $\frac{7}{8}$ "x6"x16'. Must be thoroughly dry, free from dead and large knots, wind shakes, sap, deep sun checks and decay. Will allow six small live knots in each board $\frac{7}{8}$ "x6"x16'.

Yellow poplar 1x10 up by 16 feet. Must be kiln dried, free from all knots, wind shakes, sap, deep sun checks and decay.

Quartered oak for shop use must be kiln dried, free from worm holes, stains or blemishes and black knots.

Long-leaf yellow pine bridge ties and timber. To be cut from live, thrifty green timber, free from decay, wind shakes, split ends or decayed knots. Timber to be cut to dimensions given, to be strictly of heart wood, excepting that not to exceed one and one-half inches of sap will be allowed on two corners, provided the timber is first class otherwise.

White cedar and chestnut fence posts. To be made from live, sound, thrifty green timber; must be straight and the bark peeled off and cut to dimensions given.

Beech and hard maple crossing plank, to be sawed from live, thrifty, green timber, and sawed to dimensions given with square edges, free from decay, split ends or decayed knots.

White oak plank and timber must be sawed from live, thrifty, green timber, and sawed to the dimensions given, with square edges, free from decay, split ends and decayed knots.

White oak piles to be from live, thrifty, white or burr oak timber, free from wind shakes or decay. Piles to be straight, bark peeled off. Piles to be not less than nine inches in diameter on small end and fourteen inches at the butt. Piles to have a gradual and even taper from small end to butt. Slim piles with swell butts or crooked piles can not be used.

Cypress piles. Same as for white oak piles.

Softwood piles. Same as for white oak piles, excepting that they need not have the bark peeled off.

Fir or Oregon pine timber, to be cut from live, thrifty, green timber, sawed square edges and to dimensions given, free from wind shakes, cross-grain, pitch seams or unsound knots, and must not have at any point sap wood running over one and one-half inches in width; must be free from knots over two inches in diameter.

CAR LUMBER SPECIFICATIONS.

White pine 1"x12"x16' and 1"x6"x16', for siding, roofing and general work. Must be thoroughly dry, free from dead and large knots, wind shakes, sap, deep sun checks and decay. Must not be more than six small live knots in each board 1"x12"x16', and not more than four live knots in each board 1"x6"x16'.

White pine (clear) 1½"x12" up by 16' for caboose work. Must be thoroughly dry, free from sap, deep sun checks and decay. Will allow three small live knots ½" diameter in each board.

White pine car siding, finished sizes, $\frac{7}{8}$ "x3¼"x8' and 9', $\frac{7}{8}$ "x5¼"x8' and 9'. Must be thoroughly dry, free from dead and large knots, wind shakes, sap, deep sun checks and decay. Will allow one knot in each board $\frac{7}{8}$ "x3¼"x8' and 9', and two knots in boards $\frac{7}{8}$ "x5¼"x8' and 9'.

White ash, 2"x12"x16' up, 1½"x8"x8' up, 4"x8"x8', for passenger car and caboose work. Must be thoroughly dry and free from all knots, wind shakes, sap, deep sun checks and decay.

Yellow poplar (soft) 1"x12" up by 16', 1½"x12" up by 16', 2"x12" up by 16', for passenger car work. Must be kiln dried, free from all knots, wind shakes, sap, deep sun checks and decay.

Cherry (clear) 1½"x12"x12' up to 16', for passenger car work. Must be thoroughly dry, free from all knots, wind shakes, sap, deep sun checks and decay.

Mahogany 1"x2"x12' up, for passenger car work. Must be thoroughly dry, perfectly clear and free from split ends, stains or blemishes, which will in any way interfere with its use.

Quarter-sawed oak, for passenger car work. Must be kiln dried, free from worm holes, stains or blemishes which will in any way interfere with its use.

Long-leaf yellow pine car sills. Sills 10" up wide require two-thirds heart on both faces the entire length of the sill; under 10" wide requires one heart face and two-thirds heart on opposite side the entire length. Must be free from through or round shakes, large, loose or unsound knots, rot or decay. Must be sawed from live, thrifty, green timber. Must be sawed full size with square edges.

Long-leaf yellow pine top sides 3"x12"x34' and 36', 3"x10"x34' and 36', 1½"x10"x34' and 36'. Must be free from round or through shakes, large, loose or unsound knots and decay, and to be sawed from live, thrifty timber.

Long-leaf heart-faced yellow pine car decking. May be 2½"x6", 8" or 10" wide by 8' 9". Must be free from sap on one face, knots must be sound and not too coarse, a 10" piece to admit of larger knots than a 6" piece. The location of the knots must be such as to not impair the strength or usefulness of the piece, nor occur on the edge where the planks are lapped, except they be absolutely sound and firmly imbedded in the piece. Decking must be free from decay or rot, loose, rotten, unsound or extremely coarse knots, round or through shakes.

White oak. All sizes for car work. Must be of the best live oak, free from dead knots, wind shakes, deep sun checks and decay.

Oak car decking, 2"x6" up by 9'. Must be free from dead knots, deep sun checks, decay and warp.

All lumber must be milled to specified sizes. Should any lumber be consigned to this company for use at car shops which does not comply with these specifications, as it is our privilege to condemn such lumber and dispose of it without holding it for inspection. All such lumber condemned a report of same to be sent to the office of Superintendent of Motive Power, giving in detail the number of pieces and sizes and reason why it is condemned.

SPECIFICATIONS FOR LUMBER REQUIRED IN CAB AND TENDER WORK.

Soft yellow poplar 2"x16" and up by 12' to 16', 3" and 12" and up by 12' to 16', for cab work. Must be kiln dried and free from all knots, wind shakes, deep sun checks, decay and sap.

White ash, 2"x12"x12' to 16', for cab and pilot work. Must be dry and free from all knots, wind shakes and decay.

Cherry 1"x8" and up by 12' to 16', 1½"x8" and up by 12'. Must be thoroughly dry and free from all knots, wind shakes, sap, deep checks and decay.

Long-leaf yellow pine tender sills to finish 5"x10"x20', and 5½"x12"x24'. Requires two-thirds heart on both faces the entire length of the sill. Must be free from round or through shakes, large, loose or unsound knots, rot or decay. Must be sawed from live, thrifty, green timber.

Long-leaf yellow pine 2"x16" and up by 16', for running boards. Must be dry, must be free from round, loose or unsound knots, free from round or through shakes and decay. To be sawed from live, thrifty, green timber.

White pine 1"x8" and up by 12' to 16', 2"x10" and up by 12' to 16', 2½"x10" and up by 12' to 16', for pattern work. Must be kiln or thoroughly dried, free from knots, wind shakes, sap, deep checks, and decay.

White pine, first and second common, 1½"x12"x16', 2"x12"x16', for tender and general work. Must be free from large and loose knots, sap, rot and decay.

White oak all sizes for engine and tender work. Must be of best live oak, free from dead knots, wind shakes, deep checks and decay.

Note.—All lumber must be properly milled to specified sizes. Should any lumber be consigned to this company for use at cab and tender shop which does not comply with these specifications, it is our privilege to condemn such lumber and not hold it for inspection. A report of all lumber condemned to be sent to the office of the Master Mechanic, giving in detail the number of pieces and sizes, and the reason why it is condemned.

SPECIFICATIONS FOR SWITCH TIES.

To be made from live, green, white or burr oak timber and sawed to dimensions given; free from rot, decay, unsound knots, splits and wind shakes; must not have to exceed one inch of wane and to be shipped in sets, each set loaded separately on car.

SPECIFICATIONS FOR LONG-LEAF YELLOW PINE BRIDGE TIMBER.

To be cut from live, thrifty, green timber, free from rot or decay, round or through shakes, split ends or rotten knots. Timber is to be cut to dimensions given, and to be strictly of heart wood, excepting that not to exceed one and one-half inches of sap will be allowed on two dimensions: 8"x16"x30' long, 8"x12"x10' to 16' long, 7"x9"x10' long, 7"x8"x16' to 30' long, 6"x8"x16' to 30' long.

SPECIFICATIONS FOR WHITE CEDAR AND CHESTNUT FENCE POSTS.

To be made from sound, live, thrifty, green timber; must be straight and the bark peeled off and cut to dimensions given. Dimensions: 7 to 8 feet long and not less than four inches in diameter.

SPECIFICATIONS FOR WHITE OAK, BEECH AND HARD MAPLE CROSSING PLANK.

Plank to be sawed from live, thrifty, green timber, and sawed to dimensions given with square edges, free from rot or decay, split ends or rotten knots. Dimensions: $3\frac{1}{2}$ " x $8\frac{1}{2}$ " x 16' long.

SPECIFICATIONS FOR WHITE OAK PLANK AND TIMBER FOR BRIDGES AND BUILDINGS.

Must be sawed from live, thrifty, green white oak, and sawed to dimensions given, with square edges, free from rot or decay, rotten knots, splits or bad ends. Dimensions: 7" x 9" x 10' to 16' long, 8" x 12" x 10' to 22' long, 2" x 6" x 16' long, 2" x 8" x 16' long, 2" x 10" x 16' long.

SPECIFICATIONS FOR WHITE HICKORY FOR GENERAL USE.

To be sawed from thrifty, green timber, sawed square edges and to dimensions given; straight grained, free from rot or decay, loose, or rotten knots and wind shakes. Dimensions: 4" x 4" x 8' to 16' long.

SPECIFICATIONS FOR WHITE OAK PILES.

To be from live, thrifty, white or burr oak timber, free from rot or decay. Piles to be straight, bark peeled off. Piles to be not less than nine inches in diameter on small end and fourteen inches at the butt. Piles to have a gradual and even taper from small end to butt. Slim piles with swell butts or crooked piles can not be used. Lengths: Twenty to forty feet long.

SPECIFICATIONS FOR CYPRESS PILES.

Cypress piles to be same specifications as for white oak piles.

SPECIFICATIONS FOR SOFT WOOD PILES.

Same as for white oak piles, excepting that they need not have the bark peeled off.

SPECIFICATIONS FOR FIR OR OREGON PINE TIMBER FOR BRIDGES AND BUILDINGS.

To be cut from live, thrifty, green timber, sawed square edges, and to dimensions given; free from wind shakes, cross-grain, pitch seams or unsound knots, and must not have at any point sap wood running over one and one-half inches in width; must be free from knots over two inches in diameter. Dimensions: 12" x 12" x 10' to 30' long, 10" x 12" x 10' to 30' long, 10" x 10" x 10' to 30' long, 8" x 12" x 10' to 30' long, 8" x 10" x 10' to 30' long, 7" x 8" x 16' to 30' long, 6" x 8" x 16' to 30' long, 4" x 12" x 12' to 30' long, 3" x 12" x 16' to 30' long, 2" x 6" x 16' long, 2" x 8" x 16' long, 2" x 10" x 16' long, 2" x 12" x 16' long, 1" x 6" x 16' long, 1" x 12" x 16' long, 2" x 4" x 16' to 20' long, 3" x 4" x 16' long, 4" x 4" x 16' long, 4" x 6" x 16' long, 4" x 8" x 16' long.

ST. LOUIS & SAN FRANCISCO RAILROAD COMPANY.**Revised "Standard" Long and Short Leaf Pine, Etc., Specifications.**

Based on the Specifications of the Southern Lumber Manufacturers' Association,
Adopted at Memphis, Tenn., January 15th, 1902.

St. Louis, Mo., August 1st, 1902.

GENERAL INSTRUCTIONS.

1. Yellow pine lumber shall be graded and classified according to the following rules and specifications as to quality, and dressed stock shall conform to the subjoined table of standard sizes—except where otherwise expressly stipulated between buyer and seller.

2. Recognized defects in yellow pine are knots, knot holes, splits (either from seasoning, ring hearts or rough handling), shake, wane, red heart, rot, rotten streaks, worm holes, pitch streaks, pitch pockets, solid pitch, torn grain, loosened grain, seasoning or kiln checks, and black or blue sap stains.

KNOTS.

3. Knots shall be classified as pin, standard and large, as to size; and round and spike as to form; and as sound, loose, encased, pith and rotten as to quality.
4. A pin knot is sound and not over half-inch in diameter.
5. A standard knot is sound and not over one and a half inches in diameter.
6. A large knot is sound and any size over one and a half inches in diameter.
7. A round knot is oval or circular in form, and the mean or average diameter of the same shall be considered in applying and construing the rules.
8. A spike knot is one sawn in a lengthwise direction.
9. A sound knot is one solid across its face, is as hard as the wood it is in, may be either red or black, and is so fixed by growth or position that it will retain its place in the piece.
10. A loose knot is one not held firmly in place by growth or position.
11. A pith knot is a small, sound knot with a pith hole not more than one-quarter-inch in diameter in the center.
12. An encased knot is one surrounded wholly or in part by bark or pitch.
13. A rotten knot is one not as hard as the wood it is in.

PITCH.

14. Pitch pockets are openings between the grain of the wood containing more or less pitch or bark, and shall be classified as large and small pitch pockets.
15. A standard pitch pocket is one not over three-eighths of an inch in open width, or three inches in length.
A small pitch pocket is one less than one-eighth of an inch in open width.
16. A pitch pocket showing open on both sides of the piece one-eighth of an inch or more in width shall be considered the same as a knot hole.
17. A pitch streak is a well-defined accumulation of pitch at one point in the piece, and when not sufficient to develop a well-defined streak, it shall not be considered a defect.
18. A small pitch streak shall be equivalent to not over one-twelfth the width and one-sixth the length of the piece it is in.
A standard pitch streak shall be equivalent to not over one-sixth the width and one-third of the length of the piece it is in.

SAP.

19. Bright sap shall not be considered a defect in any of the grades provided for and described in these rules. The restriction or exclusion of bright sap constitutes a special class of material which can only be secured by special contract.
20. Blued sap shall not be considered a defect in any of the grades of common lumber.

MISCELLANEOUS.

21. Firm red heart shall not be considered a defect in any of the grades of common lumber.
22. Defects in rough stock caused by improper manufacture and drying will reduce grade, unless they can be removed in dressing such stock to standard sizes.
23. All stock shall be inspected on the face side to determine the grade. And for stock surfaced one side the dressed surface shall be considered the face side. And for stock rough or dressed two sides, the best side shall be considered the face, but the reverse side of all such stock should not be more than one grade lower.
24. Imperfect manufacture in dressed stock, such as torn grain, loosened grain, broken knots, mismatched, insufficient tongue or groove on flooring, ceiling, drop siding, etc., shall be considered defects and will reduce grade according as they are slight or serious in their effects on the use of the stock.
25. Pieces of either flooring, ceiling or drop siding having less than 3-16-inch of tongue shall not be admitted in any grade above No. 2 common. Pieces with 3-16-inch or more of tongue to be admitted in any grade.
26. In all grades of flooring, ceiling, drop siding, etc., wane on the reverse side, not exceeding one-third the width and one-sixth the length of any piece, provided the wane does not extend into the tongue, nor over one-half the thickness below the groove, is admissible.
27. Chipped grain consists in a part of the surface being chipped or broken out in small particles below the line of the cut, and, as usually found, should not be classed as torn grain and shall not be considered a defect.
28. Torn grain consists in a part of the wood being torn out in dressing. It occurs around knots and curly places.
29. Loosened grain consists in a point of one grain being torn loose from the next grain. It occurs on the heart side of the piece, and is a serious defect, especially in flooring.

30. The grade of all regular stock shall be determined by the number, character and position of the defects visible in any piece. The enumerated defects admissible in any grade are intended to be descriptive of the coarsest pieces such grades may contain. The average quality of the grade should be about midway between such pieces and the coarsest pieces allowed in the next higher grade.

31. Lumber and timber sawed for specific purposes must be inspected with a view to its adaptability for the use intended. Material not conforming to standard sizes, for agricultural implement companies, wagon companies, car manufacturing companies, railway companies, etc., shall be governed by special contract.

32. The standard lengths are multiples of two feet, ten to twenty-four feet, inclusive, for boards, strips, dimension, joists and timbers. Longer or shorter lengths than those herein specified are special. Odd and fractional lengths shall be counted as of the next higher even length.

33. On stock width shipments of No. 1 common and better lumber, either rough or dressed one or two sides, no piece shall be admissible that is more than one-quarter-inch scant on eight-inch and under; three-eighth-inch scant on 10-inch, or one-half-inch scant on 12-inch or wider. All 4-inch and wider No. 2 common stock may go one-half-inch scant in width.

34. Yellow pine of a better grade than No. 1 common, up to four inches in width, shall be classified as to grain as edge grain and flat grain.

Edge grain has been variously designated as rift sawn, vertical grain, quarter sawn, all being commercially synonymous terms. Edge grain stock is especially desirable for flooring, and admits no piece in which the angle of the grain exceeds 45 degrees from vertical at any point, thus excluding all pieces that will sliver or shell from wear. Such as will not meet these requirements shall be known as flat grain.

35. All dressed stock shall be measured and sold strip count, viz.: Full size of rough material necessarily used in its manufacture.

All sizes one-inch or less in thickness shall be counted as one-inch thick.

36. Equivalent means equal, and in construing and applying these rules, the defects allowed, whether specified or not, are understood to be equivalent in damaging effect to those mentioned applying to stock under consideration. •

37. The foregoing general observations shall apply to and govern the application of the following rules:

DRESSED YELLOW PINE FINISHING.

(Grades: 1st and 2d clear; 3d clear.)

38. **First and Second Clear.**—Inch, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch, rough or dressed one or two sides up to and including eight inches wide, must show one face practically clear of all defects. Ten inches wide will admit any one of the following defects: One split not more than six inches long, one small pitch pocket, one pin knot, pitch streak or blue sap stain not to exceed the equivalent of six square inches. One-third of any shipment of 12 and 14-inch in addition to one straight split not to exceed in length the width of the piece, will admit any one of the following defects or its equivalent: Three pin knots, one standard knot, two small pitch pockets, or one large pitch pocket, one small pitch streak, small kiln or seasoning checks, one blue sap stain one and a half inches wide running across the face of the piece.

Each two inches above fourteen inches in width, in addition to one straight split, not to exceed in length the width of the piece, will admit any two of the defects allowed in twelve-inch or their equivalent. Pieces otherwise admissible, which have loosened or torn grain on the face side, shall be put in a lower grade.

39. **Special.**—In case both sides are desired clear special contract must be made. Defective dressing on the reverse side of finishing is admissible.

40. **Third Clear.**—Inch, $1\frac{1}{4}$, $1\frac{1}{2}$ and 2 inch, rough or dressed one or two sides up to and including ten inches in width, in addition to one straight split not to exceed in length the width of the piece, may have any two of the following defects or their equivalent: Slight torn grain, three pin knots, one standard knot, three small pitch pockets, one standard pitch pocket, one standard pitch streak, three blue sap stains two inches wide across the face or blue sap not over eight inches deep on one end, wane not to exceed one inch in width and one-sixth the length of the piece, or small kiln or seasoning checks. Twelve or fourteen inches will admit three of the above defects or their equivalent.

FLOORING.

(Grades: A and B flat, A, B and C edge grain, No. 1 and 2 Common.)

41. **A Flat Flooring** must be practically free from defects on the face side and well manufactured.

42. **B Flat Flooring** may have any two of the following defects or their equivalent: Blue sap stain not to exceed 15 per cent. of the face, three pin knots, one standard

knot, three small pitch pockets, one standard pitch pocket, one standard pitch streak, slight torn grain, or small kiln or seasoning checks.

Pieces otherwise good enough for A, but containing not over six small pin worm holes that have no blue sap about them, shall be admitted in B.

43. **Edge Grain Flooring** shall take the same inspection as flat grain, except as to the angle of the grain.

43½. Heart face edge grain shall be free from sap on face side.

44. **No. 1 Common Flooring** will admit of sound knots, not over one-half the width of the piece in the rough, blue sap, pitch streaks, pitch pockets, firm red heart, slight shake, torn grain, defects in manufacture, kiln or seasoning checks.

Pieces otherwise good enough for A, but containing one loose or one unsound knot or knot hole one and a half inches in diameter or less, shall be graded No. 1 common.

Pieces otherwise good enough for A, but containing not over ten small pin worm holes that have no blue sap stain about them, shall be admitted in the grade of No. 1 common.

Pieces otherwise good enough for A, but containing one pith knot, shall be admitted in the grade of No. 1 common.

45. **No. 2 Common** admits of all pieces that will not grade No. 1 common which can be used for cheap floors or sheathing without waste of more than one-fourth the length of any one piece.

46. **Center Matched Flooring** shall be required to come up to grade on face side only.

CEILING.

(Grades: A, B, No. 1 and No. 2 Common.)

47. **A Ceiling** must be practically free from defects on the face side, and well manufactured.

48. **B Ceiling** will admit of any two of the following defects or their equivalent: Slight torn grain, three pin knots, one standard knot, three small pitch pockets, one standard pitch pocket, one small pitch streak, seasoning or kiln checks that do not go through, blue sap stain or firm red heart not to exceed 15 per cent. of the face.

Pieces otherwise good enough for A, but containing not over six small pin worm holes that have no blue sap about them, shall be admitted in B.

49. **No. 1 Common Ceiling** will admit sound knots not over one-half the width of piece in the rough, blue sap, pitch streaks, pitch pockets, firm red heart, slight shake, torn grain, kiln or seasoning checks, or defects in manufacture.

Pieces otherwise good enough for A, but containing one loose or unsound knot or knot hole one and a half inches in diameter or less, shall be graded No. 1 common.

Pieces otherwise good enough for A, but containing not over ten small pin worm holes that have no blue stain about them, shall be graded No. 1 common.

Pieces otherwise good enough for A, but containing one pith knot, shall be admitted in the grade of No. 1 common.

50. **No. 2 Common Ceiling** admits of all pieces not as good as No. 1 common that can be used without waste of more than one-fourth the length of any one piece.

DROP SIDING.

(Grades: A, B and No. 1 Common.)

52. **A Drop Siding** must be practically free for defects on the face side and well manufactured.

53. **B Drop Siding** will admit any two of the following defects, or their equivalent: Slight torn grain, three pin knots, one standard knot, blue sap stain or firm red heart not to exceed 15 per cent. of the face, and slight kiln and seasoning checks.

Pieces otherwise good enough for A, but containing not over six small pin worm holes that have no blue sap about them, shall be admitted in B.

54. **No. 1 Common Drop Siding** will admit one standard pitch streak or one large pitch pocket, or their equivalent; and in addition, sound knots not over one-half the width of piece in the rough, blue sap stain, firm red heart, slight shake, torn grain, defects in manufacture, and kiln or seasoning checks that do not go through the piece.

Pieces otherwise good enough for A, but containing one loose or unsound knot or knot hole one and a half inches in diameter or less, shall be graded No. 1 common.

Pieces otherwise good enough for A, but containing not over ten small pin worm holes that have no blue stain about them, shall be graded No. 1 common.

Pieces otherwise good enough for A, but containing one pith knot, shall be admitted in the grade of No. 1 common.

BEVEL SIDING.

(Grades: A, B and No. 1 Common.)

55. **Bevel Siding** shall be graded according to the rules for drop siding, and will admit in addition slight imperfections on the thin edge, which will be covered by the lap when laid four and a half inches to the weather.

PARTITION.

(Grades: A, B and No. 1 Common.)

56. **Partition** shall be graded according to Ceiling rules, and must meet the requirements of the specified grades on the face side only, but the reverse side shall not be more than one grade lower.

MOULDED CASING AND BASE—WINDOW AND DOOR JAMBS.

(Grades: A and B.)

57. **A Moulded Casing and Base** must be practically free from defects on the face side and well manufactured.

58. **B Casing or Base** consists of rejections made after dressing stock inspected in the rough as "A." The defects admitted in B ceiling shall be allowed.

Window or Door Jambs shall be graded the same as moulded casing and base.

See section No. 35 for width.

COMMON BOARDS, SHIPLAP AND BARN SIDING.

8, 10 and 12 Inches Wide.

(Grades: Nos. 1, 2 and 3 Common.)

59. **No. 1 Common Boards**, dressed one or two sides, and No. 1 common shiplap and barn siding shall be well manufactured; will admit any number of sound knots, not over one-fourth of the width of the piece if located at the edge, nor over one-third of the width of the piece if located away from the edge; or their equivalent spike knots; provided, however, that the spike knots when located on the edge do not occupy more than one-half the thickness of said edge; two pith knots, one straight split not to exceed in length the width of the piece, pitch, pitch pockets, blue sap, seasoning checks that do not go through, firm red heart, wane half-inch deep on edge, and one-third the length of the piece or its equivalent, and a limited number of small pin worm holes well scattered. These boards should be firm and strong and suitable for use in all ordinary construction.

GROOVED ROOFING.

Grooved Roofing shall be graded by rules governing No. 1 boards, omitting the pith knots, worm holes and splits in end.

60. **No. 2 Common Boards** dressed one or two sides, and No. 2 common shiplap, No. 2 common grooved roofing may contain any number of knots, none of which are over four and a half inches in diameter, or their equivalent spike knots, worm holes, one straight split one-fourth the length of the piece, but must be free from through rotten streaks, through heart shakes over one-half of the length of the piece, and wane over two inches wide exceeding one-half the length of the piece.

A knot hole one and a half inches in diameter, or its equivalent in small knot holes or rotten streaks, will be allowed, provided the piece is otherwise as good as No. 1 common.

FENCING.

3, 4 and 6 Inches Wide.

(Grades: No. 1, 2 and 3 Common.)

61. **No. 1 Fencing** may contain the following defects or their equivalent: Sound knots, not over one-half width of piece at any point throughout its length; spike knots, whose length is not over one-half the width of the piece, and if on the edge not to exceed one-half the thickness, three pith knots, or their equivalent, wane one-half inch deep on edge and one-half of the length of the piece, pitch, pitch pockets, blue sap, seasoning checks, firm red heart, and a limited number of small pin worm holes well scattered.

62. **No. 2 Fencing**, in addition to the defects allowed in No. 1 Common, will admit the following defects or their equivalent: Knots that do not badly weaken the piece at any point, small, unsound or loose knots, one straight split one-fourth the length of the piece, worm holes, rotten streaks that do not go through; shake and wane, but must be good enough to be used in full length as fencing.

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A knot hole $1\frac{1}{2}$ inches in diameter or its equivalent in small hollow knots will be allowed, provided the piece is otherwise as good as No. 1 Common.

63. **No. 3 Fencing** and No. 3 Boards is defective lumber, and will admit of coarse knots, knot holes, very wormy pieces, some red rot and other defects that will not prevent its use as a whole for cheap sheathing, or cutting one-half its length as No. 2 Common.

64. Miscut 1-inch Boards and Fencing which do not fall below $\frac{3}{4}$ -inch in thickness shall be admitted in No. 2 Common, provided the grade of such thin stock is otherwise as good as No. 1 Common.

DIMENSION, S. 1 S. 1 E.

(Grades: No. 1, No. 2 and No. 3.)

65. Inspection of Dimension is a question of strength and uniformity of size, and whatever reduces its strength in cross-section must be considered a defect to that extent.

66. **No. 1 Common Dimension** may contain sound knots, none of which in 2×4 s should be larger than two inches in diameter on one or both sides of the piece, and on wider stock which do not occupy more than one-third of the cross-section at any point throughout its length if located at the edge of the piece; or more than one-half of the cross-section, if located away from the edge; two pith knots, or smaller or more defective knots which do not weaken the piece more than the knot aforesaid; will admit of seasoning checks, firm red heart, heart shakes that do not go through, wane, pitch, blue sap stains, pitch pockets, splits in ends not exceeding in length the width of the piece, a limited number of small pin worm holes well scattered, and such other defects as do not prevent its use as substantial structural material.

67. **No. 2 Common Dimension** may have knots which do not occupy more than one-half of the cross-section at any one point if located at the edge of the piece, nor more than two-thirds of the cross-section if located away from the edge; smaller, loose, hollow or rotten knots that do not weaken the piece more than the knots aforesaid; will admit rotten streaks, shake, wane, worm holes, and other defects which do not prevent its use without waste.

68. **No. 3 Dimension** will include all pieces falling below No. 2 grade which are sound enough to use for cheap building material.

69. Miscut 2-inch stock which does not fall below $1\frac{1}{2}$ inches in thickness shall be admitted in No. 2 Common, provided such pieces are in all other respects as good as No. 1 Common.

ROUGH YELLOW PINE FINISHING.

70. Finish must be evenly manufactured, and shall embrace all sizes from 1 to 2 inches in thickness by 4 inches and over in width.

71. No inch, $1\frac{1}{4}$ and $1\frac{1}{2}$ finishing lumber, unless otherwise ordered, shall measure when dry more than 1-16-inch scant in thickness and on 2-inch it may be $\frac{1}{8}$ -inch scant.

72. Wane and seasoning checks that will dress out in working to standard thickness and widths are admissible.

73. Subject to the foregoing provisions. Rough Finishing shall be graded according to the specifications applying to dressed finishing lumber.

All rough finishing lumber, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

When like grade on both faces is required, special contract must be made.

COMMON BOARDS, FENCING AND DIMENSION.

74. Rough Common Boards and Fencing must be well manufactured, and should not be less than $\frac{7}{8}$ -inch thick when dry.

75. Rough 2-inch Common shall be well manufactured, and not less than $1\frac{7}{8}$ inches thick when green, or $1\frac{3}{4}$ inches thick when dry. The several widths must not be less than $\frac{1}{8}$ -inch over the standard dressing width for such stock.

Rough Common Dimension of a greater thickness than 2 inches and less than 4 inches, shall be subject to special contract as to thickness and width.

76. **Rough Dimension**, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

77. The defects admissible in Rough Boards, Fencing and Dimension shall be the same as those applying to dressed stock of like kind and grade, and such further defects as would disappear in dressing to standard sizes of such material shall be allowed.

No. 1 COMMON TIMBERS.

78. **Rough Timbers**, 4x4 and larger, shall not be more than $\frac{1}{4}$ -inch scant when green, and be well manufactured, with not less than three square edges, and must be free from knots that will materially weaken the piece.

Timbers 10x10 in size may have a 2-inch wane on one corner, measured on faces, or its equivalent on two or more corners, one-third the length of the piece. Larger sizes may have proportionately greater defects.

Shakes extending not over one-eighth of the length of the piece are admissible, and seasoning checks shall not be considered a defect.

79. **Dressed Timbers** shall conform in grading to the specifications applying to rough timbers of same size.

80. **Rough Timbers**, if thicker than specified thickness for dry or green stock, may be dressed to such standard thickness, and when so dressed shall be considered as rough stock.

CAR MATERIAL.

81. **Passenger Car Flooring**. Rough dry, $1\frac{1}{2}$ and 2x4 inch, 16 feet long, plump sizes ordered, will take same inspection as grades 41 or 43, as may be ordered.

82. **Baggage Car Flooring, etc.** Rough dry, $1\frac{1}{2}$ and 2x6 inches, 10 feet or 20 feet long, plump sizes ordered, will admit of sap on one corner, not to exceed 1 inch measured diagonally, but no kiln or season checks; other defects in grade 41, not conflicting with above, admitted.

83. **Engine Running Boards, Coach Steps, etc.** Rough dry, plump sizes ordered, $2\frac{1}{4}$ inches thick, 12 to 18 inches wide, 16 feet long and $1\frac{1}{4}$ x10 inches, 10, 12, 14 or 16 feet long, will admit sap on two corners on same side, not to exceed one inch, measured diagonally; other defects in grade 41, in proportion to the width, not conflicting with above, admitted.

84. **Box Car Flooring**. Rough, 2x8 inches, 9 or 18 feet long, plump size ordered, admits sap on two corners on same side, not to exceed one inch, measured diagonally on each corner; may admit standard knots, provided they are at least once their diameter from either edge.

85. **Baggage Car Ceiling, etc.** Rough dry, 1x6 inches, 14 or 16 feet long, plump size ordered, will take same inspection as 41 or 42, as may be ordered.

86. **Car Siding, Lining and Roofing**. 1x4 inches, 16 feet long, finished per standard blue-print, will take same inspection as grades 41 or 42, as ordered.

87. **Coal Car Sideboards**. Rough, plump size ordered; must be well manufactured from sound, long leaf live timber. Sound knots not exceeding $1\frac{1}{2}$ inches in diameter will be allowed, provided their location is such as not to impair the strength or durability of the piece for the purpose intended. Must be free from shakes or splits. Inspectors must be careful to reject any piece in which a number of knots are located near each other, which would weaken the piece. One side to be free from sap, other side and two edges may have not to exceed 50 per cent. of sap.

88. **Freight Car Sills and Plates**. Rough, plump sizes ordered. Must be evenly manufactured from sound, growing timber, free from black, loose or rotten knots, wind shakes, red heart or red heart streaks. Sticks $10\frac{1}{2}$ x $10\frac{1}{2}$ inches and under will admit of sap on one corner, not to exceed 33 per cent. on face and edge. Sticks over $10\frac{1}{2}$ x $10\frac{1}{2}$ inches will admit sap on two corners, not to exceed 33 per cent. on one face and two edges. Must be sawed so heart will not split out. Sticks injured by grapple irons will be rejected.

89. **Passenger Car Sills and Plates**. Rough, plump sizes ordered. Must be evenly manufactured from sound, growing timber, free from black, loose or rotten knots, wind shakes, red heart or red heart streaks. Will admit of sap on one corner, not to exceed 20 per cent. on face and edge. Must be sawed so heart will not split out. Sticks injured by grapple irons will be rejected.

90. **Inspection and Disposition of Culls**. Inspection at destination will conform strictly to specifications, and no allowance will be made for pieces rejected, as their value will be less than the freight.

STANDARD SIZES OF DRESSED LUMBER.

Finishing. 1-inch S. 1 S. or 2 S. to 13-16, $1\frac{1}{4}$ -inch S. 1 S. or 2 S. to 1 3-32, $1\frac{1}{2}$ -inch S. 1 S. or 2 S. to 1 11-32, 2-inch S. 1 S. or 2 S. to $1\frac{3}{4}$ inches.

Moulded Casing and Base. 13-16 to patterns as per Southern Lumber Manufacturers' Association Moulding Book, 1901 edition. 1x4 S. 4 S. shall be $3\frac{1}{2}$ inches wide, finished; and 1x6 S. 4 S. shall be $5\frac{1}{2}$ inches wide, finished.

Flooring. The standard of 1x3, 1x4 and 1x6 inches shall be 13-16x $2\frac{1}{4}$, $3\frac{1}{4}$ and $5\frac{1}{4}$ inches; $1\frac{1}{4}$ -inch Flooring shall be 1 3-32 inches thick.

Drop Siding. D. and M. $\frac{3}{4} \times 3\frac{1}{4}$ and $5\frac{1}{4}$ inches. Drop Siding Shiplap, $\frac{3}{4} \times 5$ -inch face, $5\frac{1}{2}$ over all.

Partition. $\frac{3}{4} \times 3\frac{1}{4}$ and $5\frac{1}{4}$ inches.

Ceiling. $\frac{3}{8}$ -inch Ceiling, 5-16-inch; $\frac{1}{2}$ -inch Ceiling, 7-16-inch; $\frac{5}{8}$ -inch Ceiling, 9-16-inch; $\frac{3}{4}$ -inch Ceiling, 11-16-inch. Same width as Flooring. The bead on all Ceiling and Partition shall be depressed 1-32 of an inch below surface line of piece.

Bevel Siding. To be made from stock S. 4 S. to 13-16 \times 5 $\frac{1}{2}$ and resawed on a bevel.

Window and Door Jambs. (See section 35.)

Dressed, rabbeted and plowed as ordered, work $\frac{3}{8}$ -inch scant of width.

Boards and Fencing. 1-inch S. 1 S. or 2 S. to 13-16-inch.

Shiplap. 8, 10 and 12 inch. 13-16 \times 7 $\frac{1}{8}$, 9 $\frac{1}{8}$ and 11 $\frac{1}{8}$ inches.

D. and M. 8, 10 and 12 inch. 13-16 \times 7 $\frac{1}{8}$, 9 $\frac{1}{8}$ and 11 $\frac{1}{8}$ inches.

Grooved Roofing. 10 and 12 inch S. 1 S. and 2 E. to 13-16 \times 9 $\frac{1}{2}$ and 11 $\frac{1}{2}$.

Dimension. 2 \times 4 D. 1 S. and 1 E. to 1 $\frac{5}{8} \times 3\frac{5}{8}$ inches; 2 \times 6 D. 1 S. and 1 E. to 1 $\frac{5}{8} \times 5\frac{5}{8}$ inches; 2 \times 8 D. 1 S. and 1 E. to 1 $\frac{5}{8} \times 7\frac{1}{2}$ inches; 2 \times 10 D. 1 S. and 1 E. to 1 $\frac{5}{8} \times 9\frac{1}{2}$ inches; 2 \times 12 D. 1 S. and 1 E. to 1 $\frac{5}{8} \times 11\frac{1}{2}$ inches; 4 \times 4 and 4 \times 6 D. 1 S. and 1 E. to $\frac{3}{8}$ -inch off side and edge; S. 4 S. $\frac{1}{4}$ inch off each side.

GENERAL SPECIFICATIONS FOR BRIDGE AND WATER SERVICE TIMBERS.

All timber shall be sawed from sound, live long-leaf yellow pine, and shall be cut square and out of wind, with adjacent sides at right angles to each other.

All timber shall be free from wane, splits, shakes, black, rotten, soft or loose knots, and from any defects that would injure its strength.

The proportion of sap and heart wood timber to be divided into five grades, as follows:

No. 1 Scale, Turntable and Howe Truss Bridge Timbers: Rough plump size as ordered, allows tight knots not greater than two inches in diameter, but no sap, red heart or other defects.

No. 2 Stringers and Caps 7 \times 16" and 12 \times 14": Bottom face 100 per cent. Adjacent sides 90 per cent., and top 50 per cent. heart wood face and sap to be about equally divided as to upper corners.

No. 3. Posts, Sills, Girts and Timbers for Bearing and Compression Loading: One corner to be of heart wood. Faces adjacent to this to be not less than 75 per cent. heart-wood face. Other two sides to have at least 50 per cent. heart wood.

No. 4. Sway Bracing, 3 \times 10": One face to be of heart wood. Other side 75 per cent. heart wood.

No. 5. Ties and Guard Rails 6 \times 8", 8 \times 8" and 5 \times 8": Bearing face to be all heart. The two faces adjacent to this to be not less than 35 per cent. heart. The remaining face to average at least 50 per cent. heart.

St. Louis, March 6, 1902.

GENERAL SPECIFICATIONS.

Oak Piling.—To be of white burr oak (no cow oak or overcup oak so-called). Must be cut when sap is out, between October 15th and April 1st, from sound, live trees, free from rot, loose or rotten knots and wind shakes, straight-grained and regular taper. Without crooks exceeding one-third width of body. Piles twenty feet or under must measure not less than twelve inches in diameter at small end, and piles twenty-two feet and over in length must measure not less than ten inches in diameter at small end.

Cypress Piling.—To be sound and straight, with bark peeled off; free from shakes and an injurious amount of peck. Made from trees that have not passed their prime, and with at least ten inches of heart wood at top or small end.

Fence Posts.—To be of white or burr oak and bark removed. Must be split from sound, straight body timber and not less than eighteen inches of wood at the small end. To be not less than seven feet or more than seven and one-half feet in length. No round posts will be accepted.

Stock Yard Posts.—To be of white or post oak, 9, 10, 12, 14 and 16 feet long. To be not less than six inches in diameter at the small end. All posts to be of gradual taper, and reasonably straight, so that boards or plank can be nailed to them without any adzing or straightening.

Car Oak.—To be sawed from good, sound, growing white or burr oak. Straight grained, sawed full size to dimensions given. Free from rot, wane, worm holes, large, loose or rotten knots, or other defects affecting strength or durability. Small amount of sap allowed.

Track and Bridge Oak.—Shall be sawed from sound, growing white or burr oak, free from rot, wane, worm holes, large, loose or rotten knots, or other defects affecting strength or durability.

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SPECIFICATIONS FOR BRIDGE TIMBER.

SPECIFICATIONS.

Chief Engineer's Office, April 17, 1901.

All bridge timber must be of long-leaf yellow pine, cut in Georgia or Alabama, and bidders must specify the State and county in which timber they propose to furnish will be cut. Only live trees must be used, and timber must be perfectly sound, free from decay, large or loose knots, windshakes, wane, and other imperfections that would reduce its life or affect its durability. It must be sawed true and full size. Sap must not show on any more than one-fourth the width of any face at any point.

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Valves, Lunkenheimer Regrinding, Brass Horizontal Check, Screw Ends.....	Fielder.
Valves, Lunkenheimer Brass, Wedge Disc Gate, Screw Ends.....	Ranch.
Valves, Lunkenheimer Brass, Pop Safety, Screw Ends.....	Fluggan.
Valves, Lunkenheimer Iron Body Pop Safety, Screw and Flange Ends.....	Magazine.
Valves, Lunkenheimer "Duro" Blow-off, Iron Body, Flange Ends.....	Terage.
Valves, Lunkenheimer Improved Pattern Generator.....	Yawning.
Water Columns, Lunkenheimer "Vigilant" Safety.....	Wishbone.
Water Gauges, Lunkenheimer Plain Pattern, Three-rod.....	Frumety.
Whistles, Lunkenheimer Plain Pattern.....	Foment.
Whistles, Lunkenheimer Single Bell Chime.....	Founder.
Whistles, Lunkenheimer Combination Fire Alarm and Piston.....	Fouldage.
Injectors, Lunkenheimer Automatic	Rabatine.
Injectors, Lunkenheimer Improved Pattern.....	Unsound.
Lubricators, Lunkenheimer "Junior" Sight-feed, Single Connection.....	Gardant.
Lubricators, Lunkenheimer "Senior" Improved Sight-feed.....	Ganghurn.
Lubricators, Lunkenheimer "Major" Sight-feed	Gardenia.
Lubricators, Lunkenheimer "Paragon" Gas Engine Sight-feed.....	Haunt.
Lubricators, Lunkenheimer "Mars" Gas Engine Sight-feed.....	Mateless.
Oil Pumps, Lunkenheimer Mechanical.....	Tornado.
Oil Pumps, Lunkenheimer "Alpha" Hand.....	Gentian.
Grease Cups, Lunkenheimer "Ideal" Automatic.....	Gordian.
Grease Cups, Lunkenheimer Screw Feed "Marine".....	Graduate.
Grease Cups, Lunkenheimer "Tiger," plain pattern	Graffage.
Grease Cups, Lunkenheimer "Lion" Automatic	Seminary.
Oil Cups, Lunkenheimer "Pioneer".....	Gramfun.
Oil Cups, Lunkenheimer "Sentinel" Sight-feed.....	Harmless.
Oil Cups, Lunkenheimer "Reserve" Pressure.....	Quitman.
Oil Cups, Lunkenheimer "Royal" Sight-feed	Granite.
Oil Cups, Lunkenheimer Plain Brass.....	Hapless.

ULMER'S
YELLOW PINE
CODE

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Benjamin F. Ulmer.

General Instructions

Care should be exercised in the use of the Combination Words used herein in making cypher words covering Car Numbers, Dollars and Cents, etc., for while they are entirely practicable, yet might be incorrectly translated if not plainly written. They should also be written as one word, and not disjointedly.

All cypher words commencing with the letter D refer to Queries, or phrases asking questions.

All cypher words commencing with W refer to various Rules and paragraphs of the Lumber Reference Book section.

The letter Q covers all phrases starting with "Quote," "Quotations," and other phrases commencing with Q.

Options, Regarding Ports of Shipment; Steamship Lines; Quotations and phrases regarding Terms will be found in very complete form in separate sections of the Code. For Qualities, see Lumber Reference Section.

ULMER'S CAR NUMBER

Bab	10,000	Aba	100	Aju	3400
Bac	20,000	Abe	200	Ajy	3500
Bad	30,000	Abi	300	Aka	3600
Baf	40,000	Abo	400	Ake	3700
Bag	50,000	Aby	500	Aki	3800
Bib	60,000	Aca	600	Ako	3900
Bic	70,000	Ace	700	Aku	4000
Bid	80,000	Aci	800	Aky	4100
Big	90,000	Aco	900	Ala	4200
Bil	100,000	Acu	1000	Ale	4300
Bim	110,000	Acy	1100	Ali	4400
Bip	120,000	Ada	1200	Alo	4500
Bis	130,000	Ade	1300	Alu	4600
Bit	140,000	Adi	1400	Aly	4700
Biv	150,000	Ado	1500	Ama	4800
Bub	160,000	Adu	1600	Ame	4900
Buc	170,000	Ady	1700	Ami	5000
Bud	180,000	Aga	1800	Amo	5100
Buf	190,000	Age	1900	Amu	5200
Bug	200,000	Agi	2000	Amy	5300
		Ago	2100	Ana	5400
		Agu	2200	Ane	5500
		Agy	2300	Ani	5600
		Aha	2400	Ano	5700
		Ahe	2500	Anu	5800
		Ahi	2600	Any	5900
		Aho	2700	Apa	6000
		Ahu	2800	Ape	6100
		Ahy	2900	Api	6200
		Aja	3000	Apo	6300
		Aje	3100	Apu	6400
		Aji	3200	Apy	6500
		Ajo	3300	Ara	6600

Example : Bufayurlyt—Car No. 199,999.

CYPHER CODE

(Copyright, 1904, by B. F. Ulmer.)

Are	6700	Lac	1	Lew	34	Low	67
Ari	6800	Lad	2	Lex	35	Lox	68
Aro	6900	Lae	3	Ley	36	Loy	69
Aru	7000	Laf	4	Lic	37	Lub	70
Ary	7100	Lag	5	Lid	38	Luc	71
Asa	7200	Lah	6	Lie	39	Lud	72
Ase	7300	Lak	7	Lif	40	Lue	73
Asi	7400	Lal	8	Lig	41	Luf	74
Aso	7500	Lam	9	Lik	42	Lug	75
Asu	7600	Lan	10	Lil	43	Lui	76
Asy	7700	Lao	11	Lim	44	Luk	77
Ata	7800	Lap	12	Lin	45	Lul	78
Ate	7900	Lar	13	Lio	46	Lum	79
Ati	8000	Las	14	Lip	47	Lun	80
Ato	8100	Lat	15	Lir	48	Luo	81
Atu	8200	Lau	16	Lis	49	Lup	82
Aty	8300	Lax	17	Lit	50	Lur	83
Awa	8400	Lay	18	Lix	51	Lus	84
Awe	8500	Lec	19	Lob	52	Lut	85
Awi	8600	Led	20	Loc	53	Luv	86
Awo	8700	Lef	21	Lod	54	Lux	87
Awu	8800	Leg	22	Loe	55	Lyd	88
Awy	8900	Leh	23	Lof	56	Lye	89
Axa	9000	Lek	24	Log	57	Lyf	90
Axe	9100	Lel	25	Lok	58	Lyg	91
Axi	9200	Lem	26	Lol	59	Lyk	92
Axo	9300	Len	27	Lom	60	Lyl	93
Axu	9400	Lee	28	Lon	61	Lym	94
Axy	9500	Leo	29	Loo	62	Lyn	95
Aya	9600	Lep	30	Lop	63	Lyo	96
Ayo	9700	Ler	31	Lor	64	Lyp	97
Ayo	9800	Les	32	Los	65	Lyr	98
Ayu	9900	Let	33	Lot	66	Lyt	99

BOARD MEASURE CONTENTS.

—FEET—

Gab	10,000	Gez	410,000	Gub	810,000
Gac	20,000	Gib	420,000	Guc	820,000
Gad	30,000	Gic	430,000	Gud	830,000
Gaf	40,000	Gid	440,000	Gue	840,000
Gag	50,000	Gif	450,000	Guf	850,000
Gah	60,000	Gig	460,000	Gug	860,000
Gaj	70,000	Gih	470,000	Guh	870,000
Gak	80,000	Gij	480,000	Guj	880,000
Gal	90,000	Gik	490,000	Guk	890,000
Gam	100,000	Gil	500,000	Gul	900,000
Gan	110,000	Gim	510,000	Gum	910,000
Gap	120,000	Gin	520,000	Gun	920,000
Gar	130,000	Gip	530,000	Gup	930,000
Gas	140,000	Gir	540,000	Gur	940,000
Gat	150,000	Gis	550,000	Gus	950,000
Gau	160,000	Git	560,000	Gut	960,000
Gav	170,000	Giv	570,000	Guv	970,000
Gaw	180,000	Giw	580,000	Guw	980,000
Gax	190,000	Gix	590,000	Gux	990,000
Gay	200,000	Giy	600,000	Guy	1,000,000
Gaz	210,000	Giz	610,000	Guz	1,010,000
Geb	220,000	Gob	620,000	Gyb	1,020,000
Gec	230,000	Goc	630,000	Gyc	1,030,000
Ged	240,000	Gof	640,000	Gyd	1,040,000
Gef	250,000	Gog	650,000	Gyf	1,050,000
Geg	260,000	Goh	660,000	Gyg	1,060,000
Geh	270,000	Goj	670,000	Gyh	1,070,000
Gej	280,000	Gok	680,000	Gyj	1,080,000
Gek	290,000	Gol	690,000	Gyk	1,090,000
Gel	300,000	Gom	700,000	Gyl	1,100,000
Gem	310,000	Gon	710,000	Gym	1,110,000
Gen	320,000	Gop	720,000	Gyn	1,120,000
Gep	330,000	Gor	730,000	Gyp	1,130,000
Ger	340,000	Gos	740,000	Gyr	1,140,000
Ges	350,000	Got	750,000	Gys	1,150,000
Get	360,000	Gou	760,000	Gyt	1,160,000
Gev	370,000	Gov	770,000	Gyu	1,170,000
Gew	380,000	Gow	780,000	Gyv	1,180,000
Gex	390,000	Goy	790,000	Gyx	1,190,000
Gey	400,000	Goz	800,000	Gyz	1,200,000

Example : Galitomoe—98,860 feet, b. m.

BOARD MEASURE CONTENTS.
—FEET—

Iba	100	Iho	3400	Ipa . . . . .	.6700
Ibe	200	Ihu	3500	Ipe . . . . .	.6800
Ibi	300	Ihy	3600	Ipi . . . . .	.6900
Ibo	400	Ija	3700	Ipo . . . . .	.7000
Ibu	500	Ije	3800	Ipu . . . . .	.7100
Iby	600	Iji	3900	Ipy . . . . .	.7200
Ica	700	Ijo	4000	Ira . . . . .	.7300
Ice	800	Iju	4100	Ire . . . . .	.7400
Ici	900	Ijy	4200	Iri . . . . .	.7500
Ico	1000	Ika	4300	Iro . . . . .	.7600
Icu	1100	Ike	4400	Iru . . . . .	.7700
Icy	1200	Iki	4500	Iry . . . . .	.7800
Ida	1300	Iko	4600	Isa . . . . .	.7900
Ide	1400	Iku	4700	Ise . . . . .	.8000
Idi	1500	Iky	4800	Isi . . . . .	.8100
Ido	1600	Ila	4900	Iso . . . . .	.8200
Idu	1700	Ile	5000	Isu . . . . .	.8300
Idy	1800	Ili	5100	Isy . . . . .	.8400
Ifa	1900	Ilo	5200	Ita . . . . .	.8500
Ife	2000	Ilu	5300	Ite . . . . .	.8600
Ifi	2100	Ily	5400	Iti . . . . .	.8700
Ifo	2200	Ima	5500	Ito . . . . .	.8800
Ifu	2300	Ime	5600	Itu . . . . .	.8900
Ify	2400	Imi	5700	Ity . . . . .	.9000
Iga	2500	Imo	5800	Iva . . . . .	.9100
Ige	2600	Imu	5900	Ive . . . . .	.9200
Igi	2700	Imy	6000	Ivi . . . . .	.9300
Igo	2800	Ina	6100	Ivo . . . . .	.9400
Igu	2900	Ine	6200	Ivu . . . . .	.9500
Igy	3000	Ini	6300	Ivy . . . . .	.9600
Iha	3100	Ino	6400	Ixa . . . . .	.9700
Ihe	3200	Inu	6500	Ixe . . . . .	.9800
Ihi	3300	Iny	6600	Ixi . . . . .	.9900

BOARD MEASURE CONTENTS.

—FEET—

Mab 1	Met 34	Mon 67
Mac 2	Meu 35	Moo 68
Mad 3	Mev 36	Mop 69
Mae 4	Mew 37	Mor 70
Maf 5	Mex 38	Mos 71
Mag 6	Mey 39	Mot 72
Mah 7	Mib 40	Mou 73
Mak 8	Mic 41	Mov 74
Mal 9	Mid 42	Mow 75
Mam 10	Mie 43	Mox 76
Man 11	Mif 44	Moy 77
Map 12	Mig 45	Mub 78
Mar 13	Mih 46	Muc 79
Mas 14	Mik 47	Mue 80
Mat 15	Mil 48	Mud 81
Mau 16	Mim 49	Muf 82
Mav 17	Min 50	Mug 83
Maw 18	Mip 51	Muh 84
Max 19	Mir 52	Muk 85
May 20	Mis 53	Mul 86
Meb 21	Mit 54	Mum 87
Mec 22	Miv 55	Mun 88
Med 23	Mix 56	Muo 89
Mef 24	Mob 57	Mup 90
Meg 25	Moc 58	Mur 91
Meh 26	Mod 59	Mus 92
Mek 27	Moe 60	Mut 93
Mel 28	Mof 61	Muv 94
Mem 29	Mog 62	Muw 95
Men 30	Moh 63	Mux 96
Mep 31	Mok 64	Muy 97
Mer 32	Mol 65	Mye 98
Mes 33	Mom 66	Myo 99

DOLLARS AND CENTS

Rab.....	\$ 100	Ric	\$4100	Rud.....	\$8100
Rac.....	200	Rid	4200	Ruf.....	8200
Rad.....	300	Rif	4300	Rug.....	8300
Raf.....	400	Rig	4400	Ruh.....	8400
Rag.....	500	Rih.....	4500	Ruj.....	8500
Rah.....	600	Rij	4600	Ruk.....	8600
Raj.....	700	Rik.....	4700	Rul.....	8700
Rak.....	800	Ril.....	4800	Rum....	8800
Ral.....	900	Rim.....	4900	Run.....	8900
Ram.....	1000	Rin.....	5000	Rup.....	9000
Ran.....	1100	Rip.....	5100	Rur.....	9100
Rap.....	1200	Rir.....	5200	Rus.....	9200
Rar.....	1300	Ris.....	5300	Rut.....	9300
Ras.....	1400	Rit.....	5400	Rux.....	9400
Rat.....	1500	Riv.....	5500	Ruy.....	9500
Rau.....	1600	Riw.....	5600	Ruz.....	9600
Rav.....	1700	Rix.....	5700	Cab.....	9700
Raw.....	1800	Rob.....	5800	Cac.....	9800
Rax.....	1900	Roc.....	5900	Cad.....	9900
Ray.....	2000	Rod.....	6000	Caf.....	10000
Reb.....	2100	Rof.....	6100	Cag.....	10100
Rec.....	2200	Rog.....	6200	Cah.....	10200
Red.....	2300	Roh.....	6300	Caj.....	10300
Ref.....	2400	Roj.....	6400	Cak.....	10400
Reg.....	2500	Rok.....	6500	Cal.....	10500
Reh.....	2600	Rol.....	6600	Cam.....	10600
Rej.....	2700	Rom.....	6700	Can.....	10700
Rek.....	2800	Ron.....	6800	Cap.....	10800
Rel.....	2900	Rop.....	6900	Car.....	10900
Rem.....	3000	Ror.....	7000	Cas.....	11000
Ren.....	3100	Ros.....	7100	Cat.....	11100
Rep.....	3200	Rot.....	7200	Cau.....	11200
Rer.....	3300	Rou.....	7300	Cav.....	11300
Res.....	3400	Rov.....	7400	Caw.....	11400
Ret.....	3500	Row.....	7500	Cax.....	11500
Rev.....	3600	Rox.....	7600	Cay.....	11600
Rew.....	3700	Roy.....	7700	Caz.....	11700
ReX.....	3800	Roz.....	7800	Ceb.....	11800
Rey.....	3900	Rub.....	7900	Cec.....	11900
Rib.....	4000	Ruc.....	8000	Ced.....	12000

Example : Caswacdoe—\$11,095.50.

DOLLARS AND CENTS.

Cef	\$12100	Col	\$16100	Jap	\$21000
Ceg	12200	Com	16200	Jar	21100
Ceh	12300	Con	16300	Jas	21200
Cej	12400	Cop	16400	Jat	21300
Cek	12500	Cor	16500	Jau	21400
Cel	12600	Cos	16600	Jav	21500
Cem	12700	Cot	16700	Jax	21600
Cen	12800	Cov	16800	Jaz	21700
Cep	12900	Cow	16900	Jeb	21800
Cer	13000	Cox	17000	Jec	21900
Ces	13100	Coz	17100	Jed	22000
Cet	13200	Cub	17200	Jef	22100
Cev	13300	Cuc	17300	Jeg	22200
Cex	13400	Cud	17400	Jek	22300
Cez	13500	Cuf	17500	Jel	22400
Cib	13600	Cug	17600	Jem	22500
Cic	13700	Cuh	17700	Jen	22600
Cid	13800	Cuj	17800	Jep	22700
Cig	13900	Cuk	17900	Jer	22800
Cif	14000	Cul	18000	Jes	22900
Cij	14100	Cum	18100	Jet	23000
Cik	14200	Cun	18200	Jev	23100
Cil	14300	Cup	18300	Jew	23200
Cim	14400	Cur	18400	Jez	23300
Cin	14500	Cus	18500	Jib	23400
Cip	14600	Cut	18600	Jic	23500
Cir	14700	Cuv	18700	Jid	23600
Cis	14800	Cuw	18800	Jif	23700
Cit	14900	Cux	18900	Jig	23800
Civ	15000	Cuz	19000	Jik	23900
Cix	15100	Jab	20000	Jil	24000
Ciz	15200	Jac	20100	Jim	24100
Cob	15300	Jad	20200	Jin	24200
Coc	15400	Jaf	20300	Jip	24300
Cod	15500	Jag	20400	Jir	24400
Cof	15600	Jah	20500	Jis	24500
Cog	15700	Jak	20600	Jit	24600
Coh	15800	Jal	20700	Jiv	24700
Coj	15900	Jam	20800	Jix	24800
Cok	16000	Jan	20900	Jiz	24900

DOLLARS AND CENTS.

Emab	\$ 1	Epas	\$34	Esal	\$67
Emac	2	Epat	35	Esam	68
Emad	3	Epau	36	Esan	69
Emae	4	Epav	37	Esap	70
Emaf	5	Epaw	38	Esar	71
Emag	6	Epax	39	Esas	72
Emah	7	Erab	40	Esat	73
Emak	8	Erac	41	Esau	74
Emal	9	Erad	42	Esaw	75
Emam	10	Erae	43	Esax	76
Eman	11	Eraf	44	Evab	77
Emao	12	Erag	45	Evac	78
Emap	13	Erah	46	Evad	79
Emar	14	Erak	47	Evae	80
Emas	15	Eral	48	Evaf	81
Emat	16	Eram	49	Evag	82
Emau	17	Eran	50	Evah	83
Emav	18	Erap	51	Evak	84
Emaw	19	Erar	52	Eval	85
Emax	20	Eras	53	Evam	86
Epab	21	Erat	54	Evan	87
Epac	22	Erau	55	Evap	88
Epad	23	Erav	56	Evar	89
Epae	24	Eraw	57	Evas	90
Epaf	25	Erax	58	Evat	91
Epag	26	Esab	59	Evau	92
Epah	27	Esac	60	Evaw	93
Epak	28	Esad	61	Ewab	94
Epal	29	Esae	62	Ewac	95
Epam	30	Esaf	63	Ewad	96
Epan	31	Esag	64	Ewae	97
Epap	32	Esah	65	Ewaf	98
Epar	33	Esak	66	Ewag	99

DOLLARS AND CENTS.

<i>CENTS.</i>	<i>CENTS.</i>	<i>CENTS.</i>
Dab 1	Dif 34	Duc 67
Dac 2	Dig 35	Dud 68
Dad 3	Dik 36	Due 69
Daf 4	Dil 37	Duf 70
Dag 5	Dim 38	Dug 71
Dak 6	Din 39	Duh 72
Dal 7	Dip 40	Dui 73
Dam 8	Dir 41	Duk 74
Dau 9	Dis 42	Dul 75
Dap 10	Dit 43	Dum 76
Dar 11	Div 44	Dun 77
Das 12	Dix 45	Duo 78
Dat 13	Diz 46	Dup 79
Dau 14	Dob 47	Dur 80
Dax 15	Doc 48	Dus 81
Deb 16	Dod 49	Dut 82
Dec 17	Doe 50	Duv 83
Ded 18	Dof 51	Duw 84
Def 19	Dog 52	Dux 85
Deg 20	Dok 53	Duy 86
Dek 21	Dol 54	Dye 87
Del 22	Dom 55	Dyf 88
Dem 23	Don 56	Dyg 89
Den 24	Dop 57	Dyk 90
Dep 25	Dor 58	Dyl 91
Der 26	Dos 59	Dym 92
Des 27	Dot 60	Dyn 93
Det 28	Dov 61	Dyo 94
Dev 29	Dow 62	Dyp 95
Dex 30	Dox 63	Dyr 96
Dib 31	Doy 64	Dys 97
Dic 32	Doz 65	Dyt 98
Did 33	Dub 66	Dyv 99

PIECES, number of; to be used alone, or as prefix to Specified Lengths, as per examples given below.

Paba	1	Peja	26	Pisa	51	Puca	76
Paca	2	Peka	27	Pita	52	Puda	77
Pada	3	Pela	28	Piva	53	Pufa	78
Pafa	4	Pema	29	Pixa	54	Puga	79
Paga	5	Pena	30	Poba	55	Puha	80
Paha	6	Pepa	31	Poca	56	Puja	81
Paja	7	Pera	32	Poda	57	Puka	82
Paka	8	Pesa	33	Pofa	58	Pula	83
Pala	9	Peta	34	Poga	59	Puma	84
Pama	10	Peva	35	Poha	60	Puna	85
Pana	11	Pexa	36	Poja	61	Pupa	86
Papa	12	Peya	37	Poka	62	Pura	87
Para	13	Piba	38	Pola	63	Pusa	88
Pasa	14	Pica	39	Poma	64	Puta	89
Pata	15	Pida	40	Pona	65	Puva	90
Pava	16	Pifa	41	Popa	66	Puwa	91
Pawa	17	Piga	42	Pora	67	Puxa	92
Paxa	18	Piha	43	Posa	68	Puya	93
Paya	19	Pija	44	Pota	69	Pyca	94
Peba	20	Pika	45	Pova	70	Pyda	95
Peca	21	Pila	46	Powa	71	Pyfa	96
Peda	22	Pima	47	Poxa	72	Pyla	97
Pefa	23	Pina	48	Poya	73	Pyma	98
Pega	24	Pipa	49	Poza	74	Pyra	99
Peha	25	Pira	50	Puba	75		
Oba	100	Oby	600	Ocu	1100	Odo	1600
Obe	200	Oca	700	Ocy	1200	Odu	1700
Obi	300	Oce	800	Oda	1300	Ody	1800
Obo	400	Oci	900	Ode	1400	Ofa	1900
Obu	500	Oco	1000	Odi	1500	Ofe	2000

Examples : Peja—37 pcs. Obapeda—122 pcs.
Obapedatago—122 pcs. 24 feet long (with affix of specific feet).
Obapedatagoyam—122 pcs. 24 feet, 7 inches long.
Pasatafuyal—14 pcs. 20 feet, 6 inches long.

SPECIFIC LENGTHS IN FEET AND INCHES.

To be used alone or as affix to "Pieces."

FEET.		FEET.		FEET.	
Taba	1	Talo	34	Tuce	67
Tabe	2	Talu	35	Tuci	68
Tabi	3	Tama	36	Tuco	69
Tabo	4	Tame	37	Tucu	70
Tabu	5	Tami	38	Tuda	71
Taca	6	Tamo	39	Tude	72
Tace	7	Tamu	40	Tudi	73
Taci	8	Tapa	41	Tudo	74
Taco	9	Tape	42	Tudu	75
Tacu	10	Tapi	43	INCHES.	
Tada	11	Tapo	44		
Tade	12	Tapu	45		
Tadi	13	Tara	46		
Tado	14	Tare	47		
Tadu	15	Tari	48		
Tafa	16	Taro	49		
Tafe	17	Taru	50		
Tafi	18	Tasa	51		
Tafo	19	Tase	52		
Tafu	20	Tasi	53		
Taga	21	Taso	54		
Tage	22	Tasu	55		
Tagi	23	Tava	56	Yab	1
Tago	24	Tave	57	Yac	2
Tagu	25	Tavi	58	Yad	3
Taka	26	Tavo	59	Yaf	4
Take	27	Tavu	60	Yag	5
Taki	28	Tuba	61	Yal	6
Tako	29	Tube	62	Yam	7
Taku	30	Tubi	63	Yap	8
Tala	31	Tubo	64	Yar	9
Tale	32	Tubu	65	Yas	10
Tali	33	Tuca	66	Yat	11
				Yaw	12

Example: Tado—14 ft. Yam—7 inches. Tadoyam—14 feet, 7 inches.

SPECIFIC DIMENSIONS, THICKNESS BY WIDTH, IN EVEN INCHES.

W I D T H S.						
Thickness by	1	2	3	4	5	6
1	Abaca	Abacist	Aback	Abactor	Abacus	Abada
2		Abaddon	Abaft	Abaisance	Abaiser	Abalist
3			Abalone	Aband	Abandon	Abandoned
4				Abandum	Abanet	Abanga
5					Abase	Abased
6						Abaser
	7	8	9	10	11	12
1	Abash	Abassis	Abatable	Abate	Abatement	Abater
2	Abattis	Abatised	Abattor	Abattoir	Abature	Abawed
3	Abaxial	Abaxile	Abay	Abba	Abbacy	Abbatial
4	Abbe	Abess	Abbey	Abbot	Abdal	Abderian
5	Abderite	Abdest	Abdicant	Abdicate	Abditory	Abdomen
6	Abduce	Abducent	Abduct	Abduction	Abductor	Abeam
	13	14	15	16	17	18
1	Abear	Abearing	Abed	Abelian	Aberrant	Aberrate
2	Abet	Abetment	Abettal	Abettor	Abeyance	Abeyant
3	Abhor	Abidance	Abide	Abider	Abiding	Abime
4	Abit	Abject	Abjection	Abjectly	Abjudge	Abjugate
5	Abjure	Abjurer	Ab lactate	Ablation	Ablative	Ablaut
6	Ablaze	Able	Ablegate	Ableness	Ablepsy	Abler

Example: Abanga—4" x 6" Ableness—6" x 16"

SPECIFIC DIMENSIONS, THICKNESS BY WIDTH, IN EVEN INCHES.

W I D T H S .						
Thickness by	7	8	9	10	11	12
7	Ablet	Ablins Abluvion	Abloom Aby Abode	Ablude Abnegate Aboding Abort	Abluent Abnet Abolish Aborted Abrade	Ablush Abnodate Aboon Abortion Abraid Abridge
8						
9						
10						
11						
12						
	13	14	15	16	17	18
7	Abroach Abscind Absent Absonous Absterge Absume	Abroad Abscond Absently Absorb Absterse Absurd	Abrogate Absconder Absinthe Absorbent Abstract Absurdity	Abrupt Absence Absist Absorber Abstracted Absurdly	Abruptly Absent Absolve Abstain Abstringe Abuna	Abscess Absentee Absonant Abstainer Abstrude Abundance
8						
9						
10						
11						
12						
	13	14	15	16	17	18
13	Abundant Abuser Abutter Abyssal Acadian Acaroid	Aburst Abusion Abuzz Acacia Acaleph Acarpous	Abusable Abusive Abye Academe Acantha Acarus	Abusage Abut Abysm Academic Acardiac Accent	Abuse Abutment Abysmal Academism Acardian Accentor	Abuseful Abuttal Abyss Academy Acarina Access
14						
15						
16						
17						
18						

Example: Abnegate—8"x10". Abusion—14"x14".

THICKNESSES AND WIDTHS IN INCHES AND FRACTIONAL INCHES.

THICKNESS				WIDTHS			
Inches		Fractional Inches		Inches		Fractional Inches	
Uba	1	Nac	1-16	Vara	1	Zab	1-16
Ube	2	Nad	1-8	Vare	2	Zac	1-8
Ubi	3	Naf	3-16	Vari	3	Zad	3-16
Ubo	4	Nag	1-2	Varo	4	Zaf	1-4
Ubu	5	Nal	5-16	Varu	5	Zag	5-16
Uby	6	Nam	3-8	Vary	6	Zak	3-8
Uca	7	Nap	7-16	Vera	7	Zal	7-16
Uce	8	Nar	1-2	Vere	8	Zam	1-2
Uci	9	Nas	9-16	Veri	9	Zap	9-16
Uco	10	Nat	5-8	Vero	10	Zar	5-8
Ucu	11	Naw	11-16	Veru	11	Zas	11-16
Ucy	12	Nuc	3-4	Very	12	Zat	3-4
Uda	13	Nud	13-16	Vira	13	Zub	13-16
Ude	14	Nuf	7-8	Viri	14	Zud	7-8
Udi	15	Nug	15-16	Viro	15	Zuf	15-16
Udo	16			Viru	16		
Udu	17			Viry	17		
Udy	18			Vora	18		
Ufa	19			Vore	19		
Ufe	20			Vori	20		
Ufi	21			Voro	21		
Ufo	22			Voru	22		
Ufu	23			Vasa	23		
Ufy	24			Vase	24		
Ula	25			Vasi	25		
Ule	26			Vaso	26		
Uli	27			Vasu	27		
Ulo	28			Visa	28		
Ulu	29			Vise	29		
Uly	30			Viso	30		

Example: Uba—1 inch. Nad—1-8 inch. Ubanad—1 1-8 inch thick.
Example: Varuzam—5 1-2 inches wide.
See pp. 15 and 16 for Specific Dimensions, giving thickness and width in even inches.

TIME OF DELIVERY IN WEEKS AND MONTHS.

FROM	— TO —				
	2 Weeks.	3 Weeks.	4 Weeks.	5 Weeks.	6 Weeks.
1 week	Babble	Babbler Babish	Babel Babism Baboo	Babery Babist Baboon Baccate	Babian Bablah Baby Baccated Bacchanal
2 weeks					
3 weeks					
4 weeks					
5 weeks					
6 weeks	Bacchant	Bacchus Bacillus	9 Weeks. Bachelor Backband Backbond	10 Weeks. Bachelry Backbite Backbone Backdown	12 Weeks. Bacillar Backboard Backdoor Backed Backer
7 weeks					
8 weeks					
9 weeks					
10 weeks					
1 month	Backfall	3 Months. Background Backlash	4 Months. Backhand Backless Backset	5 Months. Backhouse Backlog Backside Backward	6 Months. Backing Backsaw Backster Backworm Bacon
2 months					
3 months					
4 months					
5 months					

DATES ADDENDA.

<i>MONTH.</i>	<i>DAYS.</i>	<i>YEARS.</i>
Jan. January	Awab 1	Kab 1900
Feb. February	Awad 2	Kac 1901
Mar. March	Awae 3	Kad 1902
Apr. April	Awaf 4	Kaf 1903
May May	Awag 5	Kag 1904
Jun. June	Awal 6	Kal 1905
Jul. July	Awam 7	Kam 1906
Aug. August	Awan 8	Kan 1907
Sep. September	Awap 9	Kap 1908
Oct. October	Awar 10	Kar 1909
Nov. November	Awat 11	Kat 1910
Dec. December	Awat 12	
	Aweb 13	
	Awed 14	
	Awef 15	
	Aweg 16	
	Awek 17	
	Awel 18	
	Awem 19	
	Awen 20	
	Awep 21	
	Awer 22	
	Awes 23	
	Awet 24	
	Awob 25	
	Awod 26	
	Awoe 27	
	Awof 28	
	Awog 29	
	Awok 30	
	Awol 31	

TIME TABLE BY HOURS, DAYS AND MONTHS.

Caaba	Noon	Cabbage	Midnight
Cab	1 P. M.	Cabbler	1 A. M.
Cabal	2 P. M.	Cabbling	2 A. M.
Cabalism	3 P. M.	Cabesse	3 A. M.
Cabalist	4 P. M.	Caber	4 A. M.
Cabalistic	5 P. M.	Cabazon	5 A. M.
Cabalize	6 P. M.	Cabin	6 A. M.
Caballer	7 P. M.	Cabinet	7 A. M.
Caballine	8 P. M.	Cabirean	8 A. M.
Cabaret	9 P. M.	Cabiric	9 A. M.
Caba's	10 P. M.	Cable	10 A. M.
Cabassou	11 P. M.	Cabled	11 A. M.
Cablet	1 Day	Cacaine	1 Week
Cabman	2 Days	Cacao	2 Weeks
Cabob	3 Days	Cachalot	3 Weeks
Caboched	4 Days	Cache	4 Weeks
Caboodle	5 Days	Cachepot	5 Weeks
Caboose	6 Days	Cachet	6 Weeks
Cabotage	7 Days	Cachou	7 Weeks
Cabrerite	8 Days	Cackerel	8 Weeks
Cabrilla	9 Days	Cackle	9 Weeks
Cabriole	10 Days	Cackling	10 Weeks
Cabriolet	15 Days	Cacolet	11 Weeks
Cabrit	20 Days	Cacoon	12 Weeks
Caburn	30 Days	Cactus	13 Weeks
Cadastral	1 Month	Cadency	7 Months
Cadaver	2 Months	Cadent	8 Months
Caddish	3 Months	Cadenza	9 Months
Caddow	4 Months	Cadet	10 Months
Caddy	5 Months	Cadew	11 Months
Cadence	6 Months	Cadge	12 Months

QUESTIONS.

Dabb	Advise by letter immediately
Dabber.....	Advise by telegraph immediately
Dabble	Advise car numbers and initials
Dabbler.....	Are you
Dabbling	At what dock or wharf will vessel discharge cargo.
Dabchick	At what dock or wharf will vessel load
Dabster.....	At what price
Dace.....	At what price can you
Dachshund	At what price can you buy
Dacian.	At what price can you charter
Dacoit.....	At what price can you deliver
Dactylic ..	At what price can you groove
Daddle	At what price can you plane
Daddock.....	At what price per 1000 pieces will you deliver
Daddy.....	At what price per 1000 ft. B.M. will you deliver
Daffodil.....	At what price per 1000 ft. B.M. will you deliver f. o. b.
Daft.....	At what price per 1000 ft. B.M. will you deliver on cars at
Daftness	At what rate can you insure cargo
Dag	By what vessel shall we ship order
Dagger.....	Can it be
Daggle	Can we
Daglock	Can we agree to
Dago.....	Can we buy
Dagon.....	Can we draw
Dagswain.....	Can we draw on you for
Dagtailed.....	Can we draw on you with B.L. attached
Dahlia.....	Can we deliver
Dahlin... ..	Can we fill vessel with portion of order
Daint	Can we fill vessel with randoms
Daintify	Can we take order on your account for
Daintily	Can we take order on your account, price per 1000 ft. to be
Daintiness	Can you
Daintrel	Can you agree to
Dainty.....	Can you buy
Dairy.....	Can you cancel order
Dairying.....	Can you change delivery to
Dairyman.....	Can you charter a vessel with capacity of
Daisied	Can you charter for
Daisy.....	Can you charter prompt vessel ; if so, name rate, capacity and when will sail
Dale.....	Can you charter vessel to commence loading in
Dalesman.....	Can you deliver
Dalliance	Can you engage freight room by sail for
Dallier.....	Can you engage freight room by steamer for
Dallop.....	Can you complete vessel with
Dally.....	Can you furnish
Dalmania	Can you furnish and deliver at
Dalmanites.....	Can you furnish and deliver at shipping port in
Dalmatian	Can you double quantity of order
Dalmatica.	Can you increase your price to
Dalsegno.....	Can you make firm offer
Daltonian.	Can you reduce your price to
Daltonism	Can you make shipment by
Daman	Can you ship
Damascene.....	Can you ship by steamer sailing

QUESTIONS—Continued.

Damascus.....	Can you ship on same vessel addition to order
Damask.....	Can you ship this week, complete, order
Damaskin.....	Do you accept our offer
Damasse.....	Do you guarantee freight at
Damassin.. . . .	Do you guarantee time of delivery
Dambonite.....	Do you want schedule rough or dressed
Dambose.....	From what point will you ship.
Damiana... . . .	From what port will you ship
Damianist.....	Have you
Dammara	Have you answered our letter
Damp.....	Have you answered our telegram
Dampen	Have you any report from
Damper.....	Have you bought
Damsel	Have you chartered for schedule
Damson.....	Have you closed at our price
Danaide	Have you drawn on us
Danaite.....	Have you received car
Danalite	Have you received our letter of
Danburite.....	Have you received our telegram of
Dance	Have you remitted
Dancer	Have you sent us
Dancing	Have you shipped car
Dancy	Have you shipped order
Dandelion	How do you want order dressed
Dandie	How fast can you deliver
Dandify	How many
Dandle	How many bills of lading will be required
Dandruff.....	How much have you yet to saw to complete order
Dandyism.....	How much may we draw on you for
Dane	How much per 1000 ft. will you advance
Danewort... . . .	How much will vessel carry
Danger	How soon, after receipt of order, will you guarantee ship- ment
Dangerous.....	How soon can you deliver
Dangle	How soon can you ship
Dangler	How shall we load vessel
Dabiel.....	Is cargo insured
Danish	Is cargo ready
Danite.....	Is vessel ready to sail
Dank	May we cut in multiples
Dankish	May we draw on you to cover contents car
Danseuse	May we draw on you to cover invoice of
Dantean	Name earliest possible time you can deliver here
Danubian.....	Name loading port
Dapatical	Name price and pro-rata quantity you will furnish
Daphnetin	Name price by sail and also by steamer
Daphnid.....	Shall we
Dapper	Shall we accept
Dapple	Shall we agree to
Darby	Shall we bid on
Dardanian	Shall we buy
Dare.....	Shall we buy for your account
Dareful	Shall we charter
Daric	Shall we charter vessel for
Dark	Shall we close on terms offered, if same best can do
Darken	Shall we effect insurance on cargo per

QUESTIONS—Continued.

Darkening	Shall we engage freight
Darkle	Shall we ship portion of order now sawn
Darkling	State length you can furnish
Darkness	State quantity of each item you can furnish
Darksome	State quantity of each length you can furnish
Darling	State quantity of each width you can furnish
Darnel	To whom shall we consign car
Darner	To whom shall we consign cargo
Darrain	What are
Darter	What are the terms
Dartle	What are you offered for
Dartoid	What can you
Dartrous	What can you agree to have
Darwinian	What can you do about
Dash	What can you do with
Dasher	What can you pay
Dashing	What can you use
Dashism	What has the vessel now on board
Dashpot	What have you shipped of order
Dastard	What is the
Datable	What is the best offer you can get
Dataria	What is the best offer you will make
Dative	What is the best you can do
Datolite	What is the latest report concerning
Datum	What is the present position of the vessel
Datura	What is the present status of the order
Daub	What is the prospect of securing
Dauber	What is the quality of
Daubing	What is the vessel's capacity
Daughter	What is your next mail address
Daunt	What is your telegraphic address.
Daunter	What quantity have you received for us of
Dauntless	What quantity have you sawn on order
Dauphin	What quantity will you guarantee to furnish
Davenport	What shall we do
Davit	What shall we fill vessel with
Dawdle	What shall we load on
Dawdler	What shall we load first
Dawn	What shall we load last
Dawsonite	What shall we offer
Daze	What shall we reply
Dazzle	What will be the
Deacon	What will be the cost of
Deaconess	What will you accept
Deaden	What will you offer for
Deafen	What will be the additional cost of
Deanery	When can you
Deanship	When can you commence delivery
Dearborn	When can you commence shipment of order
Dearth	When did you
Dearn	When did you ship car
Debar	When is it to be delivered
Debark	When do you expect to be here
Debarment	When do you expect to be in
Debase	When may we expect
Debasement	When will vessel be loaded and sail

QUESTIONS—Continued.

Debatable.....	When will you
Debate.....	When will you ship order
Debateful.....	Where is it to be delivered
Debating.....	Will the parties
Debauch.....	Will you
Debonair.....	Will you accept
Debosh.....	Will you charter vessel
Debris.....	Will you give us refusal for
Debtor.....	Will you make us an offer

Instructions, Miscellaneous Phrases, Etc.

Eager.....	Accept offer
Eagle.....	Accept offer, provided
Eardrop.....	Accept the conditions
Earldom.....	Accept your offer for
Earnest.....	Accept your offer of
Earpick.....	According to
Earth.....	According to schedule
Earthen.....	Account sales for
Earthly.....	Add to
Earthquake.....	Add to order
Easeful.....	Add to price your commission
Easement.....	Additional cost will be
Easiness.....	All next month
Easter.....	All next week
Eastward.....	All this month
Eatable.....	All this week
Eavedrop.....	All this and next month
Ebonite.....	All this and next week
Ebony.....	Already sawed on order
Ebrious.....	Already sawed the complete order
Ecbasis.....	And over
Ecboline.....	And under
Eccentric.....	Answer at once
Echo.....	Answer by letter
Eclectic.....	Answer by telegraph
Eclipse.....	Answer delayed account absence
Ecliptic.....	Are authorized to arrange
Eclogue.....	Arrived at
Ecostate.....	Arrived here on
Ecphoneme.....	As near specified thickness as possible
Ecphractic.....	As per our inquiry of
Ecru.....	As per our inquiry designated
Ecstasy.....	As per our order of
Ectasis.....	As per our order designated
Edentate.....	As per our letter of
Edictal.....	As per our telegram of
Edify.....	As per your inquiry of
Editor.....	As per your inquiry designated
Educate.....	As per your order of
Education.....	As per your order designated
Effectation.....	As per your letter of
Effectual.....	As per your telegram of
Egoism.....	As soon as

INSTRUCTIONS, ETC.—Continued.

Egret.....	As soon as it is decided
Eider	As soon as possible
Ejection	As soon as we can
Eking	As soon as we receive reply
Elapse.....	As soon as you can
Elastic.....	As soon as you receive reply
Elate.....	As stated in
Elative	At any cost
Elbow.....	At best obtainable price
Elder.l.....	At more per 1000 ft. B. M. than
Eldest	At more than
Elect	At not to exceed per 1000 ft. B. M.
Election	At our offer
Elector	At our option
Electric.....	At our risk
Electrify.....	As per 1000 ft. B. M.
Elegance	At price named
Element	At price named by us
Elephant	At price named by you
Elevate.....	Attend to
Elevator.....	Attend to matter of
Elfish	Attend to subject-matter and report
Elimate	At the lowest possible price
Elixate.....	At your limit
Ellagic	At your offer
Elodian.....	At your option
Elongate	Average feet long
Eloper.....	Average inches wide
Eloquent	Average length in feet is
Elusion.....	Average length in feet must be
Eluxate.....	Average of lengths must be full
Elysian	Average price is
Emaciate	Average width in inches is
Emanant	Average width in inches must be
Embrace.	Bad weather has delayed cutting
Embalm.....	Bad weather has delayed loading
Embank.....	Bad weather is delaying loading
Embase.....	Balance of bill
Emblem	Balance of cargo, if any
Embolden	Balance of cargo is
Embolus.....	Balance of cargo may be
Emboss.....	Balance of order
Embow	Balance of order not yet sawn
Emulous.....	Balance of order No. — must be
Enamel.....	Balance of order No. — must be shipped by
Encamp	Balance of order No. — must be shipped at once
Enchain.....	Balance of order No. — will be shipped —
Enchant	Balance to your credit is
Envy.....	Be sure that
Epact.....	Before receipt of your letter of
Epaulet.....	Before receipt of your telegram of
Epicure.....	Before time named
Epidemic	Before we commence
Epidote.....	Before you commence
Epigram.....	Best price we can name is——
Epistle	Best we can do is

INSTRUCTIONS, ETC.—Continued.

Epitaph.....	Best we can do on chartering
Epithet.....	Bills of lading
Epoch	Bills of lading and specifications of each
Epsomite.....	Bills of lading and specifications to cover car
Equate	Bills of lading must be attached to draft
Equip	Bills of lading to be made in our name as shippers
Equity.....	Bills of lading to be made on blanks sent by us
Erect	Bills of lading to be made on blanks to be sent by us
Erection.....	Bills of lading to be made to order
Ergot.....	Boring not to exceed 1½ in. diameter per lineal foot
Ermine	Boring not exceeding 1½ in. diameter per piece
Errant.....	Boring and turning not exceeding 1½ in. diameter per lineal foot
Erratic	Boring and turning not exceeding 1½ in. diameter per piece
Erupt	Buy at best price possible
Escapade.....	Buyer accepts
Escape.....	Buyer to pay
Escort.....	Buy for delivery in
Escrow.....	Buy for us
Espouse.....	By express
Esquire.....	By first steamer you can have order ready for
Essay.....	By later vessels
Essence.....	By mail
Estate.....	By mail to-day we send you
Esteem.....	By measurements at
Ester	By rail
Estrange.....	By sail
Estreat.....	By steamer
Esurine.....	By steamer to sail
Etching.....	By telegraph
Eternal.....	By vessel to sail in about
Etherize.....	By you
Ethics	Can buy
Euchre	Can buy from
Euclid.....	Can buy now at
Eugenic	Can charter
Evade.....	Can charter spot vessel
Evoke	Can charter to commence loading in
Evolute.....	Can deliver
Fabella	Can furnish
Fable.....	Can get refusal
Fabric.....	Can guarantee
Fabulist.....	Can only advance
Facient.....	Can only net you about
Faction.....	Can pay
Factor	Can probably charter at rate per 1000 ft. b. m.
Faculty.....	Can probably close
Fagging.....	Can probably sell at
Faint.....	Can probably ship your order
Fairy.....	Can probably ship by steamer at
Faithful	Can secure for you
Fake	Can sell
Falcon.....	Can sell at
Fallen.....	Can ship
Falter	Can ship by
Familist.....	Can ship by steamer to sail

INSTRUCTIONS, ETC. Continued.

Famish	Can ship by vessel now loading to sail in
Famous.	Can use
Fanatic	Can use vessel here
Fancy	Cancel order for
Fang	Cancel order for schedule designated
Farce	Cannot accept
Fare	Cannot accept at your figures
Farina	Cannot accept offer, but will accept at
Farm	Cannot accept offer, but will accept if
Faro ..	Cannot accept offer, but will accept if delivery is made
Farrier	Cannot accept schedule designated
Farther	Cannot answer until return of
Fascet	Cannot be changed
Fashion	Cannot buy
Fasten	Cannot cancel order
Fathom.	Cannot charter at less than
Fatigue	Cannot commence delivery before
Fatten	Cannot commence sawing before
Fawn	Cannot communicate with mills before
Feast	Cannot communicate with mills except by mail
Feat	Cannot cut anything under days
Feather.	Cannot decide about
Feature	Cannot deliver
Federal.	Cannot deliver balance of order before
Feeble	Cannot deliver in time named
Feeder	Cannot dress it for less than per 1000 ft. b. m.
Feign	Cannot dress it; too large for planer
Fellow	Cannot duplicate
Felon	Cannot fill order as per your letter of
Female	Cannot fill order as per your telegram of
Fence	Cannot furnish
Fender	Cannot furnish any addition to schedule
Fennel	Cannot furnish at less than
Ferment	Cannot furnish at price named
Fern	Cannot furnish balance of order
Ferret	Cannot furnish balance in time
Ferry.	Cannot furnish schedule
Fertile	Cannot guarantee
Fervent	Cannot increase order
Festive	Cannot make any advance
Fetch	Cannot make a price on
Fetter	Cannot make delivery in less time than
Feud ...	Cannot meet you until
Fever	Cannot name time of delivery until
Fiasco	Cannot obtain offer; you must name price
Fibre	Cannot pay
Fickle.	Cannot pay more than
Fiction	Cannot pay over
Fiddle	Cannot possibly ship sooner than
Fidelity	Cannot reduce price
Field	Cannot secure
Fiend	Cannot sell
Fight	Cannot ship
Figment	Cannot ship before steamer of
Filbert	Cannot use
Filch	Car initials are

INSTRUCTIONS, ETC.—Continued.

Filler.	Car number is
Film.	Car number and initials are
Finch.	Cargo is all ready
Finical.	Cargo to be consigned in B. L. to
Finny.	Cargo will not be ready until
Fissure.	Cash on B. L. at
Fitter.	Cash on delivery
Flag.	Cash within ten days from delivery, less per cent
Flake.	Cash within ten days from delivery, without discount
Flange.	Change from
Flannel.	Changed from
Flapper.	Change to
Flare.	Changed to
Flash.	Charter party
Flaunt.	Check on
Fleece.	Check to balance
Fleet.	Close at very best price possible
Flesh.	Close if possible
Flight.	Close immediately
Flinch.	Close on terms offered, if you cannot do better
Flint.	Close schedule
Flirt.	Closed at your figures
Flock.	Closed at your figures subject to confirmation
Floral.	Commence cutting immediately
Florid.	Commence cutting immediately order No
Floss.	Commence delivery
Flounder.	Commission of 1 per cent
Flower.	Commission of 1 1-2 per cent
Fluent.	Commission of 2 per cent
Fluid.	Commission of 2 1-2 per cent
Flush.	Commission of 5 per cent
Flute.	Commission of 25 cts per M ft
Flutter.	Commission of 50 cts per M ft
Foible.	Complete delivery
Folly.	Complete delivery if possible, in days
Forage.	Conditions named in your
Forbear.	Conditions you require
Forge.	Confirm by letter your telegram of
Forlorn.	Confirm by letter your quotation of
Fortress.	Consign to
Fossil.	Consign to us at
Fracture.	Corrected invoice
Freeze.	Corrected schedule
Friar.	Cost, freight and insurance
Fringe.	Cost, of shipment by steamer over sail will be
Frolic.	Cut all you can
Froth.	Cut all you can of
Frown.	Cut all you can in multiples
Fulcrum.	Cut and ship by
Function.	Cut and ship quick
Fusil.	Cut and ship this week
Gabble.	Days from receipt of order
Gaiter.	Declines to take order
Gallant.	Deck load by
Galley.	Deck load capacity
Garden.	Delay in delivery

INSTRUCTIONS, ETC.—Continued.

Garnish	Delay in delivery account no cars
Gastric	Deliver at once
Gaudy.....	Deliver by rail
Gaunt.....	Deliver by steamer
Gelatin.....	Deliver f. o. b. cars at
Gentle.....	Deliver f. o. b. cars here
German	Deliver f. o. b. steamer at
Gesture.....	Deliver f. o. b. vessel at
Geyser	Deliver within lightering limits New York Harbor
Giant	Deliver per month
Gilder.....	Delivery can be
Girdle.....	Delivery must be guaranteed
Glacier	Delivery must be made in time specified
Glazier	Delivery to vessel
Gleam.....	Delivery to vessel to commence after acceptance of your bid in about
Glide.....	Delivery within lightering limits
Gloat.....	Dimensions after dressing
Gloom.	Dimensions are
Glory.....	Direct letters to me at
Gnash ...	Direct telegrams to me at
Gobble	Do all you can
Gospel.....	Do not act before receipt of
Graft.....	Do not agree to
Grammar.. ..	Do not buy
Grange	Do not buy any more until you hear from us
Grapple.	Do not saw any more on
Grass.....	Do not saw any more than
Groom... ..	Do not ship
Gunner.....	Do not understand telegram ; repeat it
Habit.....	Do not want the order
Hacker.....	Do what you think best for us
Harmony	Draft at one day's sight
Hawk	Draft at three days' sight
Heather	Draft at five days' sight
Heave	Draft at ten days' sight
Hectic	Draft at fifteen days' sight
Hedge.....	Draft at thirty days' sight
Helm.....	Draft at sight for
Helot.....	Draft presented and accepted to-day
Hemmer.....	Draft presented and paid to-day
Henbane	Draft presented ; cannot accept
Herald.....	Draw on us
Heresy	Draw on you
Hermit	Due date is
Heroine.....	During the month of
Hessian.....	Each item of
Hinge	Each length
Hippish. ...	Each size
Hirsute	Earlier if possible
Historian	Feet and over long
History.....	Fill the order
Hither.....	Fill the order excepting
Hobby.....	Fill the vessel
Hockey.....	First cargo to be delivered in
Homage	First cargo to be shipped in

INSTRUCTIONS, ETC.—Continued.

Honey	Forward my letters to
Hoosier.....	Four sides to be dressed
Horizon.	Free from black sap
Horned.....	Free from rot
Horologe.. . . .	Free from sap
Horror.. . . .	Free from wane
Hortense.. . . .	From date of shipment
Hostage	From receipt of order
Hound.....	Full to size
Hover	Get price from
Howler.....	Give us particulars
Huckster.....	Give you particulars
Hulk	Go at once to
Human	Guarantee delivery
Humid	Has been changed
Humorist.. . . .	Has been paid
Hunger.....	Has been protested
Hunter.....	Have accepted
Husband	Have agreed to
Husk	Have an inquiry for
Iceland.....	Have bought
Ideal	Have bought of
Image.....	Have cancelled
Imagine	Have closed order on your quotations
Imitate.. . . .	Have drawn on
Impose	Have drawn on you
Income.. . . .	Have made best settlement possible
Indent	Have no letter from you to-day
Indian.....	Have not agreed to
Indict	Have paid
Infamous	Have received
Infuse	Have received from
Inherit	Have received letter from
Insight.....	Have received telegram from
Instinct.....	Have received your letter of
Intrude... . . .	Have received day telegram of even date
Invest	Have received your red telegram of
Invoke	Have replied
Jacket	Have replied by letter to-day
Jacob.....	Have sold to
Jade.....	Have telegraphed
Jasmine.....	Have written full particulars
Jealous.....	Have written you to-day
Jelly	Hold proceeds subject to order of
Jostle.....	Holidays and Sundays excepted
Joyous.....	If absolutely necessary, not otherwise
Jumper.....	If accepted
Jungle	If accepted immediately
Junket	If accepted within
Keeper	If declined
Kitchen.....	If declined will not renew offer
Knack	If it can be sawn and shipped at once
Label.....	If later than
Ladder	If necessary
Lament.....	If order is received immediately
Lance	If possible

INSTRUCTIONS, ETC.—Continued.

Landau.....	If so
Lanky.....	If that is the best you can do
Lantern.....	If we can
Latin.....	If we cannot
Lattice.....	If you can
Launder.....	If you cannot
Lavish.....	If you can deliver
Lawless.....	If you cannot deliver
Leach.....	If you cannot ship on steamer
Leather.....	If you decline our offer, wire your best price
Leaver.....	If you have
Leaven.....	Immediate delivery
Ledge.....	Immediate decision
Leech.....	Impossible to delay longer
Levant.....	Impossible to furnish
Level.....	Impossible to furnish at price named
Liberty.....	Impossible to furnish in time specified
Lime.....	In about
Linger.....	In addition to
Lion.....	In a few days
Liquid.....	In box cars
Lizard.....	In flat cars
Loathe.....	Increase lengths of
Lobby.....	In less than
Locality.....	In lots of equal quantity each
Locust.....	In time named
Lodge.....	Including dressing
Logic.....	Inquiry from
Loiter.....	Inquiry No
Lotto.....	Is all sawn
Lounge.....	Is all sawn and will be shipped
Loyal.....	Is away from home
Lurch.....	It can be
Luster.....	It cannot be
Lyric.....	It is
Magic.....	It is impossible
Magnet.....	It is impossible to get cars
Maiden.....	It is impossible to ship any
Major.....	It is impossible to ship before
Mallard.....	It is possible
Malady.....	It is probable
Mandolin.....	It is to be delivered
Manse.....	It is wanted
Maroon.....	It must all come together
Marshal.....	It must be
Martinet.....	It must be shipped
Marvel.....	It must be shipped by
Mask.....	It should be
Masonry.....	It will be
Master.....	It will not do
Mastiff.....	Keep offer open until
Maxim.....	Keep us posted by letter
Mechanic.....	Keep us posted by telegram
Medicine.....	Largest size we can plane is
Menace.....	Last half of
Mental.....	Latest report from vessel

INSTRUCTIONS, ETC.—Continued.

Mercy.....	Lay days commence
Merino.. ..	Lay days not to commence
Meteor	Leave out of
Mica.....	Lengths to average
Militate.....	Lengths may be
Millet.....	Lengths must be
Mince	Letter not received ; telegraph contents if important
Minister	Let us have
Miser.....	Let us know
Mission.....	Let us know when
Mister	Let us know where
Mitten.....	Lineal feet
Moderate.....	Load first
Monetize.....	Load immediately
Mongrel.....	Load in order named
Monkey.....	Load last
Monstrous.....	Load next
Moose.....	Loading port will be
Moral	Long leaf
Morbid	Lowest obtainable rate
Mortal.....	Lumberman's Yellow Pine and Cypress Reference Book (COPY)
Mortify.. ..	Mailed you on
Motto	Make a price
Mount.....	May be
Mouse	May be changed
Mumble.....	May be cut in multiples
Mushroom.....	May be shipped
Mutable	Measured as
Mutual	Measured at butt end
Mystic.. ..	Measured at top end
Naked	Measured in Middle
Nerve	Measured in rough before planing
Nickel.. ..	Measured net after planing
Nipple	More per 1000 feet b. m.
Nitrous	More than
Normal.	Must be
Nostril	Must be cut to length ; no multiples received
Notion	Must be delivered
Nutrition.	Must be delivered here
Objective.	Must be sawn full to sizes given
Oblong.	Must consult mills before answering about
Obscure	Must withdraw
Observant	My next mail address is
Obvert	My next telegraphic address is
Occupy.....	Name of vessel is
Oddness	No change can be made in
Offend	No seconds will be received
Oilcloth	Note is due
Oleander	Note is payable at
Omega	Note on account
Omnibus	Not later than
Opiate.....	Not to be planed
Opium.....	Not yet decided
Optical.	Numbers of the cars shipped
Opulent	On account of

INSTRUCTIONS, ETC —Continued.

Orange.....	On account shipment by
Ordeal	On arrival at your port
Ordinate	On arrival here
Organic	On arrival of vessel
Orient.....	On cars at
Ornate	On cars at your mill
Orthodox.	On cars here
Osculate.....	On condition (s) named
Ounce	On deck
Outlaw	On delivery
Oxford	On demurrage
Oyster.....	On his return
Ozone	On my arrival at
Pabulum	On my return to
Palate	On our account
Palm	On your account
Pamper.....	On receipt of
Pansy	On same terms as
Pantry	On terms named
Parade	On usual terms
Paragon.....	On your contract
Parch	One side to be dressed
Parish.....	One side and one edge to be dressed
Parole..	Order cars for
Parquet.	Order cars placed at
Partake	Order cars placed at our mill for
Partner.....	Order goes to mill to-day
Passion	Other conditions
Pastel.....	Other conditions as per our letter of
Patent.....	Other conditions as per our offer
Patron	Other conditions as per our telegram of
Paving	Other conditions as per your letter of
Peasant.	Other conditions as per your offer
Peculate.....	Other conditions as per your telegram of
Penance	Other parties
Penitent.....	Other parties have taken order for
Pension	Our bid was by sail
Pentecost.....	Our bid was by steamer
Penury.....	Our bid was for rough
Pepper	Our letter of
Perceive.....	Our telegram of
Perform	Our lowest price
Perish..	Our offer for
Perishable	Our offer of
Perjury.....	Our parties
Permit	Our present offer
Perplex	Our prices are net f. o. b.
Persian.	Our prices are net f. o. b. Brunswick, Ga
Persuade	Our prices are net f. o. b. Fernandina, Fla
Petition	Our prices are net f. o. b. Jacksonville, Fla
Petrify	Our prices are net f. o. b. Savannah, Ga
Pewter	Our prices are net f. o. b. Brunswick or Savannah our option
Phase	Our prices are net f. o. b. Fernandina or Jacksonville our option
Pickle.....	Our prices are net f. o. b. Savannah or Jacksonville our option
Picture	Our prices are net f. o. b. Fernandina or Savannah our option
Pigment.....	Our prices are net f. o. b. steamer dock at

INSTRUCTIONS, ETC.—Continued.

Pilgrim.....	Our prices are net f. o. b. vessel at
Pillow.....	Our red telegram of
Pious.....	Our shipment by
Piping.....	Our telegram of
Pirate	Payable by us
Pistol	Payable by you
Plaster	Payable on the
Plater	Payable to our order
Plead.....	Payable to the order of
Pledge	Payable to your order
Plodding	Pay all expenses
Pluck	Payment to be made
Plume.....	Per cent
Plump.	Per piece
Plunge	Per schedule
Plural	Per 1000 ft. B.M.
Poacher.....	Place of delivery
Pointer	Place of shipment
Poison	Planed 1 side and 1 edge
Poker	Planed 1 side and 2 edges
Polar.....	Planed 2 sides and 1 edge
Police	Planed 4 sides
Politic.	Planed 1 side, edges tongued and grooved
Pontoon.....	Planed 2 sides, edges tongued and grooved
Pool.....	Planed 1 side, edges T. & G., beaded on 1 E.
Poppy	Planed 1 side, edges T. & G., beaded on 2 Es.
Porridge.....	Planed 2 sides, edges T. & G., beaded on 2 Es.
Portal	Plane off only
Porter	Plane off to make thickness
Portray.....	Planing here will cost per 100 ft. B. M.
Potent	Planing to be done before shipment
Pottery.....	Planing will be done here
Pouch.....	Port to be named on closing of order
Poultry.....	Price named allows
Pound... ..	Price named is net
Poverty.....	Privilege of
Powder.....	Probable time of sailing
Practice	Pro-rata quantity of each item
Praise	Pro-rata quantity of each length
Preach.....	Pro-rata quantity of each size
Precious.....	Provided nothing over
Preface	Provided that
Prelude.....	Provided we can
Prescribe	Provided you can
Press	Quality to be as good as
Pride.....	Quality to be as per
Primary	Quality to be suitable for
Primer.....	Quantity in bills of lading
Quadrant.....	Quote price (s) f. o. b. cars at
Quadrille.....	Quote price (s) f. o. b. vessel at
Quail.....	Quote lowest price at which you will deliver
Quake.....	Quote lowest price f. o. b. dock at our port
Quarrel.....	Quote lowest price at which you will deliver
Quarry	Quote lowest price f. o. b. dock at your port
Quart.....	Quote lowest price at which you will deliver f. o. b. vessel at Baltimore

INSTRUCTIONS, ETC.—Continued.

Queen	Quote lowest price at which you will deliver f. o. b. vessel at Boston
Quench	Quote lowest price at which you will deliver f. o. b. vessel at Brunswick
Quest	Quote lowest price at which you will deliver f. o. b. vessel at Fernandina
Quibble	Quote lowest price at which you will deliver f. o. b. vessel at Jacksonville
Quill	Quote lowest price at which you will deliver f. o. b. vessel at New York
Quince	Quote lowest price at which you will deliver f. o. b. vessel at Pensacola
Quinine	Quote lowest price at which you will deliver f. o. b. vessel at Philadelphia
Quire	Quote lowest price at which you will deliver f. o. b. vessel at Port Tampa
Quoin	Quote lowest price at which you will deliver f. o. b. vessel at Savannah
Rabble	Random lengths
Racket	Random lengths to average
Radiant	Random widths and lengths
Radical	Random widths to average
Radius	Reduced quantity pro-rata
Raffle	Reduce length of
Rakish	Reduce size of
Rambler	Reduce your price to
Ramify	Referring to our letter of
Rampage	Referring to our telegram of
Ranch	Referring to your letter of
Ransack	Referring to your telegram of
Rapture	Rely on prompt delivery
Rascal	Remitted by mail
Ratchet	Reply by first mail
Ratify	Reply by red message to-night
Rational	Reply by telegraph immediately
Rattle	Reply by wire in plain language
Raven	Sailed from
Razor	Same terms and conditions as
Realize	Same terms and conditions as last shipment
Reamer	Sawn or hewn
Rebate	Sawn or hewn, or both
Reception	Sawn and hewn
Recover	Schedule to be furnished in accordance with
Recruit	Seconds, if any, at one-half price
Reform	Seconds, if any, subject to your order
Register	Send instructions by mail
Regulate	Send instructions by wire
Relapse	Send us
Relent	Send us by mail
Reliance	Send us specifications covering cargo
Reluctant	Send us specifications covering car
Remedy	Sent you
Remorse	Sent you by mail
Renounce	Shall we do so
Repeal	Ship all you can by
Repent	Ship all you can by steamer of

INSTRUCTIONS, ETC.—Continued.

Replevin.....	Ship balance on steamer of
Repose	Ship by
Reproach	Ship by steamer to sail
Reptile.....	Ship each carload as soon as ready
Repulse.....	Ship immediately
Repute	Ship immediately all you have sawn
Rescue.....	Ship on same vessel
Reside	Ship the whole order together
Resign	Ship without fail by
Resist	Shipping documents
Resolute	Shipping documents mailed you
Resolve.....	Size (or sizes) after dressing
Resort.....	Sooner if possible
Resource.....	Sound and square-edge, Long Leaf
Respite	Sound and square-edged, Short Leaf
Restive	Specifications and bills of lading
Restore	Square-butted
Restrain	Square-edged, without restriction as to species of pine
Resultant.....	Steamer dock at
Retaliate.....	Stop cutting on
Reticence.....	Stop shipping
Retort	Straight and well hewn
Retract	Subject to
Retrench	Subject to confirmation by wire
Reveal	Subject to confirmation by letter
Revenge.....	Subject to order of
Reversal.....	Subject to reply by wire immediately
Review.....	Sundays and holidays excepted
Revolt.....	Telegram came too late
Rhyme	Telegram received
Ribbon.....	Telegraph answer until
Riddle	Telegraph answer at once whether you accept or decline
Riding.....	Telegraph authority to close
Rifle.....	Telegraph authority to draw for
Rigor.....	Telegraph immediately
Riotous.....	Telegraph immediately best you can do
Ripple	Telegraph immediately best price at which you will furnish
Ritual.....	Telegraph immediately car numbers
Rivalry.....	Telegraph immediately car numbers and initials
Rivet.....	Telegraph immediately quickest delivery you will guarantee
Roach.....	Telegraph quantity you can furnish
Roast.....	Telegraph reply at our expense
Rocket	Telegraph us
Rodent.....	Telegraph us as soon as
Rogue	Telegraph us when you ship
Roman	Telegraph us your best offer
Romantic.....	Terms are
Rooster.....	Terms as per
Rosin.....	Terms net cash
Rotary.....	Terms 30 days, net cash
Rouge.....	Terms 60 days, net cash
Routine.....	Terms 90 days, net cash
Royal	Terms 30 days, less 1 per cent. for cash in 10 days
Ruby.....	Terms 60 days, less 1 per cent. for cash in 10 days
Rudder	Terms 90 days, less 1 per cent. for cash in 10 days
Rudiment	Terms 30 days, less 2 per cent. for cash in 10 days

INSTRUCTIONS, ETC.—Continued.

Ruffian.....	Terms 60 days, less 2 per cent. for cash in 10 days
Rumble.....	Terms 90 days, less 2 per cent. for cash in 10 days
Rummage	Terms quoted subject to 1 per cent. discount if invoice paid by
Rumpus	Terms quoted subject to 2 per cent. discount if invoice paid by
Runner.....	Terms quoted subject to 3 per cent. discount if invoice paid by
Rural.....	Terms quoted subject to 5 per cent. discount if invoice paid by
Rustic.....	The best information we can obtain is
Savian	The cargo is
Saffron	The quality is
Sage ..	The quantity is to be
Saint.....	The quantity must be
Saliant ..	The rate will be
Salmon ..	The terms of
Salvage.....	The terms of payment are
Sandal.....	There is
Satan.....	There is no
Savage.....	Thickest we can plane is
Scandal.....	Thickness after dressing
Scarlet.....	Think it advisable to
Scholar.....	Think we can
Scold.....	This is best we can do
Scorch.....	This is best we will do
Scorn,	This may be
Scotch	This order is in addition to
Scottish.....	This order is in place of
Scowl.....	This price covers only cost, freight and insurance
Scream.....	Time named for delivery
Seaman.....	Time named for delivery of order
Secular.....	Time too short
Sedate.....	To be
Senior.....	To be delivered
Serene.....	To be delivered at
Serpent.....	To be delivered within lighterage limits New York
Servant.....	To be delivered here
Session.....	To be delivered immediately
Setter	To be delivered on dock at
Sexton	To be delivered on dock here
Shadow.....	To be furnished
Shark ...	To be hewn
Shaver	To be in full
Shelter.....	To be inspected at
Shield.....	To be paid for size after planing
Shiver.....	To be sawn
Shooter.....	To be shipped
Shouter	To be shipped in box cars
Shrine	Tongued and grooved
Signal.....	Too late to

INSTRUCTIONS, ETC.—Continued.

Transportation Lines.

Silence	Clyde Line steamer
Silicate.	Clyde Line steamer for Boston
Silicon	Clyde Line steamer for Boston to sail
Silky.	Clyde Line steamer for New York
Silver	Clyde Line steamer for New York to sail
Simper.	Merchants & Miners Transp. Co.'s steamer
Simplify.	Merchants & Miners Transp. Co.'s steamer for Baltimore
Simulate	Merchants & Miners Transp. Co.'s steamer for Baltimore to sail
Sincere.	Merchants & Miners Transp. Co.'s steamer for Philadelphia
Sinecure.	Merchants & Miners Transp. Co.'s steamer for Philadelphia to sail
Sinful	Mallory Line steamer
Singing	Mallory Line steamer for Boston
Sinister.	Mallory Line steamer for Boston to sail
Sinker.	Mallory Line steamer for New York
Siphon	Mallory Line steamer for New York to sail
Siren.	Ocean S. S. Co.'s steamer
Sitting	Ocean S. S. Co.'s steamer for Boston
Skate.	Ocean S. S. Co.'s steamer for Boston to sail
Skeleton.	Ocean S. S. Co.'s steamer for New York
Skeptic.	Clyde Line steamer for New York to sail
Sketch	Try and ship all before
Skiff	ULMER'S CAR NUMBERS CODE
Skimmer	ULMER'S YELLOW PINE CODE
Skirt.	Unable to fill order
Skunk.	Unable to fill in time named order
Slack.	Under deck
Slam	Under our contract
Slang	Unless you can
Slashed.	Unless you can deliver in time named
Slave.	Until you have received our letter of
Slaw	Until you hear further from us
Slay.	Use Standard Lumber Ref. Book and Code in answering
Sledge.	Use Ulmer's Car Numbers Code in telegraphing car numbers
Sleep.	Use Ulmer's Yellow Pine Code in answering
Sleeve.	Usual terms
Sleigh	Very important
Slice	Vessel arrived at
Slide	Vessel cleared from
Sling.	Vessel commenced loading
Sliver	Vessel due at your port about
Slogan	Vessel has arrived
Slope.	Vessel has arrived for your schedule
Sloth.	Vessel has finished her hold
Slumber	Vessel has finished loading
Smack	Vessel has now on board
Smart	Vessel is now at
Smear.	Vessel is now ready to sail
Smell	Vessel is now loading for
Smile	Vessel is now loading at
Smite	Vessel is now on the way to
Smoke.	Vessel is too large for our order
Smolder.	Vessel is too small for our order

INSTRUCTIONS, ETC.—TRANSPORTATION LINES—Continued.

Smudge	Vessel is waiting
Snail.....	Vessel left here for
Snap.....	Vessel left —— for ——
Snarl.....	Vessel sailed
Snipe.....	Vessel sailed for
Snout.....	Vessel to have
Snow.....	Vessel to load at rate per day of — ft.
Snuff.....	Vessel to pay all towages
Snug.....	Vessel will finish her hold
Soapy.....	Vessel will finish complete cargo
Sober.....	Vessel will carry
Socialist.	Vessel will commence loading
Socket	Vessel will be loaded and ready to sail
Sodium.	Vessel will finish loading
Solace.....	Vessel will sail
Soldier.....	Vessel will sail about
Solemn.....	Vessel's capacity is
Soloist.,	Vessel's capacity does not exceed
Soluble.	Vessel's capacity must not exceed
Sonnet	Vessel's present position is

Options as to Ports of Vessel's Loading.

Soprano.....	Vessel to be loaded at Brunswick or Savannah, our option
Sordid	Vessel to be loaded at Brunswick or Savannah, your option
Sororis	Vessel to be loaded at Brunswick, Savannah or Jacksonville, our option
Sorry.....	Vessel to be loaded at Brunswick, Savannah or Jacksonville, your option
Spangle.....	Vessel to be loaded at Brunswick or Fernandina, our option
Spank.....	Vessel to be loaded at Brunswick or Fernandina, your option
Spark.....	Vessel to be loaded at Fernandina or Jacksonville, our option
Speaker.....	Vessel to be loaded at Fernandina or Jacksonville, your option

Sperm.....	Want the order
Spice.....	We accept
Spider.. ..	We accept your offer if you allow
Spinster	We advise
Spirit.	We agree to
Splendor.....	We are
Splint	We are drawing on you for
Sponge	We are drawing on you through
Spoon	We are now sawing the order
Spout	We are delayed by
Spring	We are mailing you check on account for
Spurn	We are offering
Squab	We are waiting
Squander.....	We can
Squeak	We can duplicate
Squint.....	We can furnish as wanted

INSTRUCTIONS, ETC.—Continued.

Stadium	We can furnish in time named
Stag	We can furnish in time named about
Stagger	We cannot
Stagnant	We cannot accept your draft
Stale	We do
Stamina	We do not
Stamp	We expect to
Staple	We expect to make shipment
Starch	We have
Starve	We have chartered
Station	We have closed
Steam	We have engaged freight
Stern	We have made
Stigma	We have not
Stint	We have paid
Stockade	We have received
Stoop	We have sent you
Stork	We have shipped
Strain	We have sold
Stranger	We have shipped to-day
Streak	We have sold to-day
Strife	We have sold to-day on cars
Strike	We intend to
Stripe	We must
Stroke	We must decline to take order
Stump	We must depend on you for
Style	We must have
Sublime	We must have an immediate reply by letter
Subside	We must have an immediate reply by telegraph
Suburb	We must have privilege of
Sucker	We must rely on you to furnish
Suffer	We send you by express
Sugar	We send you by mail
Sulky	We shall want
Sulphur	We want
Summer	We want cars for order
Summons	We will
Sunburn	We will accept
Sunshine	We will accept if
Supper	We will advise later
Support	We will commence delivery
Suppress	We will commence sawing
Supreme	We will commence shipping
Surge	We will deliver
Surmise	We will do all we can
Surname	We will do our best
Surprise	We will do our best to ship by
Surrender	We will do our best to ship by steamer of
Surround	We will draw on you for
Survey	We will duplicate
Survive	We will duplicate last order
Suspect	We will furnish
Suspend	We will furnish and deliver
Sustain	We will furnish at price named
Swage	We will furnish in time named
Swallow	We will pay

INSTRUCTIONS, ETC.—Continued.

Swamp	We will ship
Swathe.....	We will ship order
Swear	We will ship on steamer to sail
Sweater.....	We will take
Sweep.....	We will not
Sweeten	We would advise
Swell.....	What we want is
Swift.....	When cargo will be ready
Swine	Will accept
Switch.....	Will accept for
Swivel.. ..	Will answer as soon as possible
Swoon.....	Will arrive at
Sword	Will arrive in
Swore	Will be ready to commence loading
Sylvan.....	Will be sawn, ready for shipment
Symbol.....	Will change delivery to ———
Sympathy	Will commence shipping
Symptom	Will cost
Syringe.....	Will cost us
Tabaret.	Will furnish from
Tablet.....	Will get answer from mills by
Tabor.....	Will go
Tabular.....	Will hold this offer good for
Tacit	Will leave to-day for
Tack	Will report about
Tactics.. ..	We will report to
Taction.....	Will represent us
Taffy.....	Will take
Tagger	Will telegraph instructions
Tail	Will telegraph later about
Tailor	Will telegraph later to-day
Taint.	Will telegraph you
Talent	Will write fully
Talker.....	Will not
Tallow.....	Will not accept
Tally	Will not go
Tamarin.....	Will not pay
Tambour.....	Will not pay more than
Tamper	Will not sail until
Tandem.....	Will not take
Tangent.....	With bills of lading attached
Tangle.....	With documents attached
Tannate.....	Withdraw offer
Tantrum.....	Withdraw order
Tape.....	Withdraw our bid on
Target.....	With our order
Tarnish.....	Without delay
Tartan	Without endorsement
Tartary	Without further instructions
Taste	Without interest
Tattler.. ..	With privilege of
Taunt.....	With the understanding that -
Taxer.....	With your order
Teacher.....	Write full particulars
Tease.....	You are
Temper.....	You can

INSTRUCTIONS, ETC.—Continued.

Templar	You can have
Tenacity	You have
Tendon.....	You may
Tenant	You may agree to
Tennis.....	You may close
Tension.....	You may close order
Terminus.....	You may close order provided
Terrier.. . . .	You may draw on us
Tertian	You may draw on us for
Tester	You may fill the
Testify.. . . .	You may sell
Textile	You may sell at
Texture.	You may sell at best price obtainable
Thatch	You may ship
Thaw.....	You may ship by sail
Theater.....	You may ship by steamer
Theme.....	You must
Theoric.	You must be in
Thermal.....	You must clear vessel before
Thimble	You must do better
Thinker.. . . .	You must guarantee
Thirst.....	You must not
Thistle	You must not pay
Thorax	You must secure
Thrash	You must ship
Threat	Your draft on
Throat .-.....	Your draft on us
Throne	Your instructions will have prompt attention
Thumb.....	Your letter came too late
Thunder	Your letter for
Tiger.....	Your letter of
Tingle.. . . .	Your market
Tipple.....	Your offer accepted
Tissue.....	Your offer declined
Titular	Your price is too high
Toddy.. . . .	Your price is too low
Toilet.....	Your red telegram of
Tonic.....	Your red telegram of last night
Tontine.....	Your telegram of
Topic.....	Your telegram of to-day
Torment.	Your telegram received

SPECIALS.

Torpedo.....	
Torpid	
Torrent.....	
Torsel.....	
Tortoise	
Torture.....	
Totter.....	
Touch	
Tough.....	
Towel... ..	
Town.....	
Tracker	
Tractive	
Trader.....	
Traduce.....	
Traffic.....	
Tragic.....	
Trail	
Traitor	
Trammel	
Trance.....	
Transit.....	

RAILROAD COMPANIES.

NAMES AND CAR INITIALS.

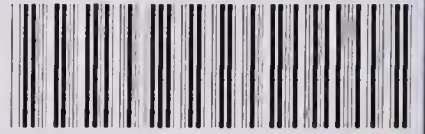
(Also used in advising routes.)

Cypher.	NAME.	INITIALS
Vacant	Alabama Great Southern	A. G. S. R. R.
Vaccine	Ann Arbor	A. A. R. R.
Vachery	Atchison, Topeka & Santa Fe	A., T. & S. Ry.
Vacuna	Atlanta & West Point	A. & W. P. R. R.
Vadantes	Atlanta, Birmingham & Atlantic	A., B. & A. R. R.
Vagal	Atlantic Coast Line	A. C. L. R. R.
Vaginant	Atlantic, Valdosta & Western	A., V. & W. R. R.
Vagenule	Baltimore & Ohio	B. & O. R. R.
Vague	Baltimore & Ohio South Western	B. & O. S. W. R. R.
Vail	Birmingham Southern	B. S. R. R.
Vain	Boston & Albany	B. & A. R. R.
Valance	Boston & Maine	B. & M. R. R.
Valency	Brunswick & Birmingham	B. & B. R. R.
Valeric	Canadian Pacific	C. P. Ry.
Valiant	Central of Georgia	C. of G. Ry.
Validly	Central R. R. of New Jersey	C. R. R. of N. J.
Valise	Central Vermont	C. V. Ry.
Valley	Charleston & Western Carolina	C. & W. C. Ry.
Valor	Chesapeake & Ohio	C. & O. Ry.
Valvate	Chicago & Alton	C. & A. Ry.
Valved	Chicago & Eastern Illinois	C. & E. I. R. R.
Vamose	Chicago & Northwestern	C. & N. Ry.
Vamper	Chicago, Burlington & Quincy	C., B. & Q. Ry.
Vamure	Chicago Great Western	C. G. W. Ry.
Vanadic	Chicago, Indianapolis & Louisville	C., I. & L. Ry.
Vanadous	Chicago, Lake Shore & Eastern	C., L. S. & E. Ry.
Vandal	Chicago, Milwaukee & St. Paul	C., M. & St. P. Ry.
Vandyke	Chicago, Peoria & St. Louis	C., P. & St. L. Ry.
Vane	Chicago, Peoria & Western	C., P. & W. Ry.
Vanfoss	Chicago, Rock Island & Pacific	C., R. I. & P. Ry.
Vanillin	Chicago, St. Paul, Minneapolis & Omaha	C., St. P., M. & O. Ry.
Vanish	Chicago, Rock Island & Texas	C., R. I. & T. Ry.
Vanner	Cincinnati, Hamilton & Dayton	C., H. & D. Ry.
Vansire	Cleveland, Cincinnati, Chicago & St. Louis	C., C., C. & St. L.
Vantage	Cumberland Valley	C. V. R. R.
Vapor	Delaware & Hudson	D. & H. Co.
Vaporish	Delaware, Lackawana & Western	D., L. & W. R. R.
Varon	Detroit Southern	D. S. R. R.
Varec	Erie	E. R. R.
Variate	Florida Central & Peninsula	F. C. & P. Ry.
Varier	Florida East Coast	F. E. C. Ry.
Variola	Georgia	Georgia.
Varisse	Georgia Southern & Florida	G. S. & F. Ry.
Varnish	Grand Trunk	G. T. Ry.
Vascular	Great Northern	G. N. Ry.
Vase	Gulf & Ship Island	G. & S. I. R. R.
Vassal	Hannibal & St. Joseph	H. & St. J. R. R.
Vasum	Hocking Valley	H. V. Ry.
Vatican	Houston & Texas Central	H. & T. C. R. R.
Vault	Houston, East & West Texas	H. E. & W. T. Ry.

Cypher	NAME.	INITIALS.
Vaunt	Houston & Shreveport	H. & S. R. R.
Vector	Illinois Central	I. C. R. R.
Vedic	Indiana, Illinois & Iowa	I., I. & I. R. R.
Vega	International & Great Northern	I. & G. N. R. R.
Vegetal	Jacksonville & Southwestern	J. & Sw. R. R.
Vegetous	Kansas City Southern	K. C. S. Ry.
Vehicle	Lehigh Valley	L. V. R. R.
Veinal	Long Island	L. I. R. R.
Vellet	Louisiana & Arkansas	L. & A. Ry.
Vellum	Louisville & Nashville	L. & N. R. R.
Velutina	Maine Central	M. C. R. R.
Velvet	Michigan Central	M. C. R. R.
Venal	Mobile & Ohio	M. & O. R. R.
Venation	Morgan's Louisiana & Texas	M.'s L. & T. R. R.
Vender	Nashville, Chattanooga & St. Louis	N., C. & St. L.
Venerate	New Orleans & Northwestern	N. & Nw. R. R.
Venge	New York Central & Hudson River	N. Y. C. & H. R.
Venial	New York, Chicago & St. Louis	N. Y., C. & St. L.
Venison	New York, New Haven & Hartford	N. Y., N. H. & H. R. R.
Venous	New York, Philadelphia & Norfolk	N. Y., P. & N. R. R.
Venter	New York, Susquehanna & Western	N. Y., S. & W. R. R.
Ventose	Norfolk & Southern	N. & Sou. R. R.
Venture	Norfolk & Western	N. & W. R. R.
Venus	Northern Alabama	N. A. Ry.
Veranda	Northern Pacific	N. P. Ry.
Verbena	Oregon R. R. & Navigation Co	O. R. R. & N. Co.
Verdant	Oregon Short Line	O. S. L. R. R.
Verdigris	Pennsylvania Lines West of Pittsburgh	P. L. W. of P.
Verdure	Pennsylvania	P. R. R.
Verger	Pere Marquette	P. M. R. R.
Verine	Philadelphia & Reading	P. & R. R. R.
Vernebus	Pittsburgh & Lake Erie	P. & L. E. R. R.
Verminate	Pittsburgh, Johnstown, Ebensburg & Eastern	P., J., E. & E. R. R.
Vernacle	Pittsburgh, Shawmut & Northern	P., S. & N. R. R.
Vernal	St. Joseph & Grand Island	St. J. & G. I. Ry.
Vernier	St. Louis & Gulf	St. L. & G. Ry.
Versant	St. Louis & San Francisco	St. L. & San F. R. R.
Versed	St. Louis, Memphis & Southeastern	St. L., M. & Se. R. R.
Version	St. Louis Southwestern	St. L. Sw. Ry.
Vertebra	St. Louis, Troy & Eastern	St. L., T. & E. R. R.
Vertex	San Antonio & Aransas Pass	S. A. & A. P. Ry.
Verticle	Seaboard Air Line	S. A. L. Ry.
Vesicle	Shreveport & Red River Valley	S. & R. R. V. Ry.
Vestales	Southern	Sou. Ry
Vestige	Texas & New Orleans	T. & N. O. R. R.
Vesture	Texas & Pacific	T. & P. Ry.
Viaduct	Toledo & Ohio Central	T. & O. C. Ry.
Vibrant	Toledo, St. Louis & Western	T., St. L. & W. R. R.
Vicar	Union Pacific	U. P. R. R.
Vicinage	Vandalia Line	V. L.
Victor	Wabash	W. R. R.
Victual	Western Maryland	W. M. R. R.
Vigil	West Virginia Central & Pittsburgh	W. V., C. & P. Ry.
Viking	Wisconsin Central	W. C. Ry.
Villain	Yazoo & Mississippi Valley R. R.	Y. & M. V. R. R.
Vincible	Youghiogheny Central	Y. C. Ry.

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